96

Closure Certification
701 17th Street SE
Independence, Iowa
Project No. 429250267
April 16, 1992

Terracon
ENVIRONMENTAL, INC.
4470 48th Avenue Court
Rock Island, Illinois 61201
(309) 788-1500

James A. Cunningham, P.E.
John F. Hartwell, P.E.
Robert L. Sholar
David E. Koch
James R. Buckhahn, C.E.T.
Russell K. Lovaas, P.E.

April 16, 1992

Pries Enterprises
P.O. Box 777
701 17th Street SE
Independence, Iowa 50644

Attention: Mr. Merle J. McMahon

RE: Closure Certification
701 17th Street SE
Independence, Iowa
Project No. 42925026

Dear Mr. McMahon:

The attached report includes documentation for the closure assessment and closure certification for the above-referenced facility. The purpose of the closure assessment was to observe the cleaning procedures and obtain information on the surface by the sampling of cleaning residues. Closure certifications from the owner/operator and independent professional engineer are included in Appendix D.

We appreciate the opportunity to be of service to you on this project. If there are any questions concerning this report, please contact us.

Yours very truly,

TERRACON ENVIRONMENTAL, INC.

Robert E. Hoffman, EIT
Project Manager

John F. Hartwell, P.E.
Iowa #9451

REH/JFH/pc2
(25026-01.RPT)
Attachments

CLOSURE REPORT
Pries Enterprises, Independence Facility
Independence, Iowa

Introduction

The Pries facility is located at 701 17th Street, Independence, Iowa. Pries is an aluminum extruder with fabrication/assembly capabilities. A site location map constructed from a United States Geological Survey (USGS) 7.5 minute topographic map (photo revised in 1972) is presented as Figure 1, Appendix A.

In 1986 construction began at the Pries Enterprise Independence, Iowa facility to add the capability of painting aluminum extrusions. The painting operation was designed to hang the extrusion horizontally and lower the extrusion into seven (7) dip tanks for cleaning and etching, parts drying, paint application, and paint curing. The first tank contained an alkaline phosphate cleaner to wash the extrusion, the extrusion then went through two (2) tanks containing water from rinse, before being dipped in a tank containing hexavalent chromium. The last three (3) tanks involved a water rinse, a sodium hydroxide and sodium phosphate seal followed by a final rinse with deionized water.

Pilot studies were run on the painting operation. Due to poor performance the operation was never put into full production. Pilot studies were suspended in the fall of 1987. Suspension of painting operation studies required draining and treatment of water tanks used in cleaning and etching process. Treatment of water in generated sludge which was stored in fifty-five (55) gallon drums on-site. Forty-nine (49) drums of waste sludge had been generated by June 1988. Chemical Waste Management (CWM) in Oakbrook, Illinois shipped forth (40) drums of the waste to their CID landfill in Calumet City, Illinois. Thirty-four (34) additional drums were generated during the cleanup and were shipped along with the remaining nine (9) drums on November 4, 1988 by CWM to CID in Calumet City, Illinois.

On February 27, 1992, Mr. Derrick Anderson, Terracon was on site to perform cleaning and sampling services of the former drum storage area (Figure 2, Appendix B). Mr. Anderson was under the remote but direct supervision of Mr. John F. Hartwell, P.E. The area that was cleaned encompasses approximately 250 square feet.

The cleaning process in the storage area involved several steps. First, the concrete and adjacent walls of the former drum area were swept. Approximately two (2) ounces of solid waste were collected in a four (4) ounce glass jar for analysis. After sweeping the concrete pad it was washed two (2) times with mops and a hot solution of water and Alconox for each cleaning. Solution and new mop heads were used for each cleaning. Following the second wash, the area was rinsed with clean potable water. After each wash cycle a washwater sample was collected from the bucket prior to placing the remaining water in a fifty-five (55) gallon drum.

Water quantity was kept to a minimum to limit runoff and facilitate rinsate collection. Prior to initiation of the cleaning process, absorbent pads were placed between storage area and any construction seams in the concrete. Liquid and residue generated during the cleaning process was containerized and samples were collected for analytical testing of chromium to determine the appropriate disposal method. Following the rinse cycle, a sample of the final rinsate was collected for analytical testing of chromium.

According to Pries personnel, the surface of the former drum storage area consists of approximately four (4) inches of concrete placed over fill material. Fill materials consist primarily of sand. No construction drawings were available for review. No construction joints were observed intersecting the designated former drum storage area. The surface of the storage area is flat

and relatively level based on visual estimates. The drum storage area is not surrounded by a spill containment structure (curbing). The nearest unpaved area is outside the building wall approximately two and one-half (2.5) feet south of the storage area beyond the exterior wall shown on Figure 3. The Terracon field personnel on-site observed that the concrete pad was in good condition. No cracking was present in the drum storage area. No sumps or drains were observed within the former drum storage area.

Sample Preservation and Analysis

The samples were collected in pre preserved containers supplied by NET Laboratory, Bartlette, Illinois. Test methods employed for the analysis of chromium samples was USEPA SW-846 test method 7190. The method detection limit (MDL) for this method is 0.001 mg/l. The test method approved in the closure plan was USEPA SW-846 test method 6010 with a MDL of 0.1 mg/l.

Analytical Results

The results for the drum storage area sweepings sampling S-1 indicated an elevated concentrations of chromium, however, due to the relatively small amount of sweeping residue (2 ounces), the amount of contamination is considered minimal. Since the entire amount of floor sweeping residue was used for sample analysis, no sediment remains at the site for disposal.

The analytical results indicate that the cleaning water samples S-2 and S-3 indicated chromium concentration of 1.02 and 0.564 milligrams per liter (mg/l) respectively. This is greater than the Health Advisory Lifetime (HAL) of 100 microgram per liter (ug/l) (Table 1, Appendix D). The HAL is established by the EPA and represents the concentration of a single contaminant in drinking water that is not expected to cause adverse health effects over a lifetime of consumption.

The analytical results from the collected rinsing water samples (S-4 and S-5) exhibited concentrations of total chromium, 0.088 and 0.100 mg/l which are at or below the HAL. The concentrations of chromium in each water sample was below the closure plan performance standard of 5 mg/l. Based on these results and after permission from the public owned treatment facility manager, the drum of cleaning water was directly discharged into the publicly owned treatment facility on March 19, 1992 without treatment. The absorbent pads were disposed as normal solid waste refuse by Pries personnel.

Conclusions

Based on the following closure assessment activities, the closure has been performed in accordance with the EPA closure plan and the rules and regulations of 40 CFR 265.112. Based on the information available at this time, we believe that no further remedial action is necessary and the site should be closed.

General Comments

This report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted environmental engineering practices. No warranty, expressed or implied is made. In the event that any changes in the nature or location of the potential source of contamination as outlined in this report are observed, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report are modified of verified in writing by the environmental engineer.

TABLE 1
ANALYTICAL CHARACTERIZATION
Pries Enterprises
Independence, Iowa

Sample #	Sample Description	Units	Total Chromium	Performance Standard	MDL
1	Residual Solids	ug/g	81.7	5	1
2	First Wash	mg/l	1.02	5	0.04
3	Second Wash	mg/l	0.564	5	0.04
4	Rinse Water	mg/l	0.088	5	0.04
5	Rinse Duplicate	mg/l	0.100	5	0.04
6	Blank	mg/l	ND	5	0.04

ug/g = Microgram per gram, roughly equivalent to parts per millions (ppm).
mg/l = Milligram per liter, roughly equivalent to parts per millions (ppm).

APPENDIX A
Figures

Terracon

SCALE 1:24 000

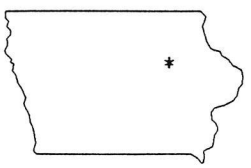
1 MILE

7000 FEET

1 KILOMETER

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

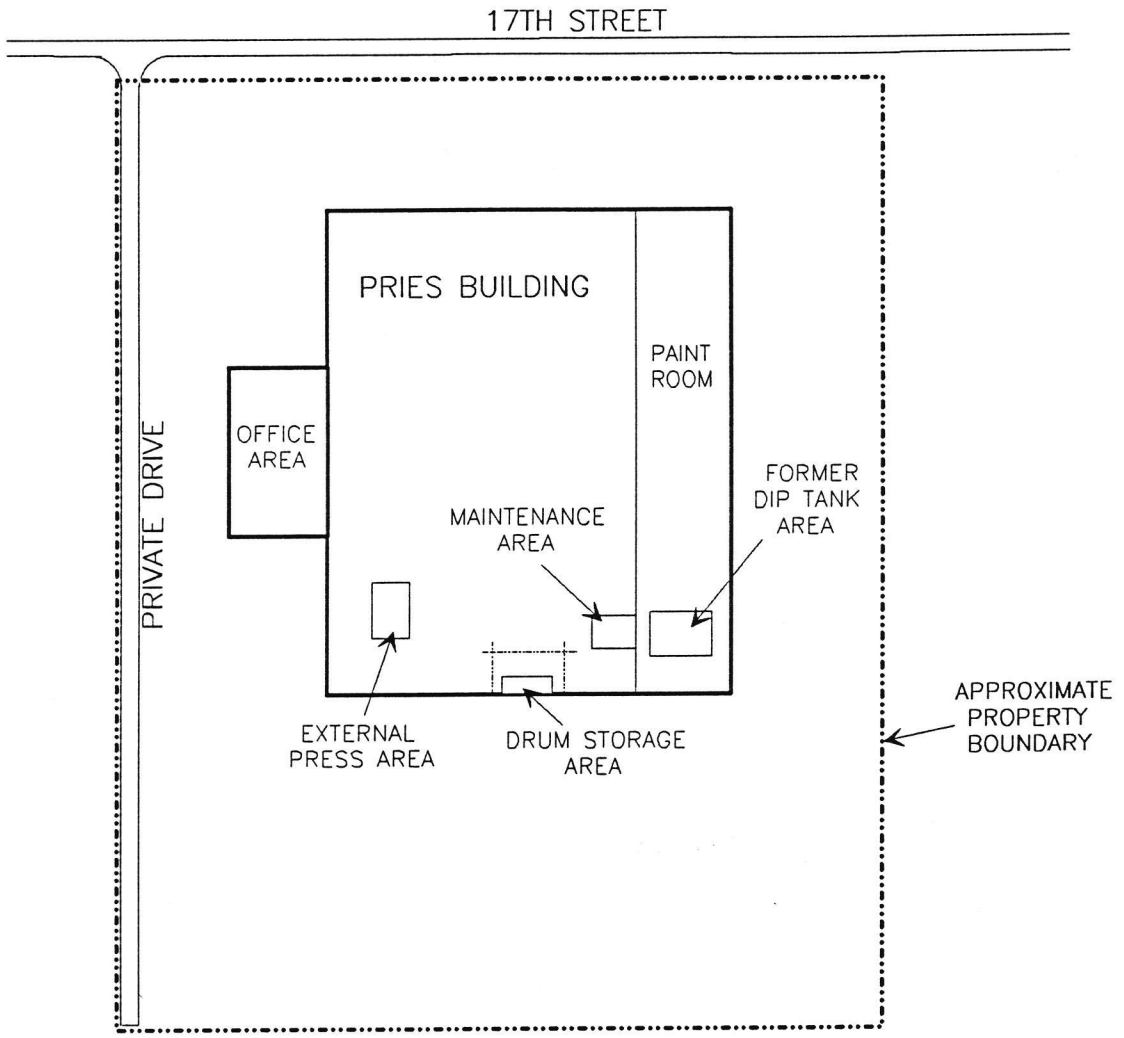
N



IOWA

FIGURE 1.
SITE LOCATION MAP
PRIES ENTERPRISES
701 17TH STREET
INDEPENDENCE, IOWA
PROJECT NO. 42925026
FILE 42925026 (4)

Terracon



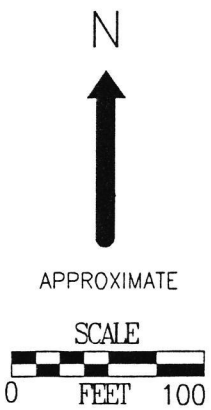
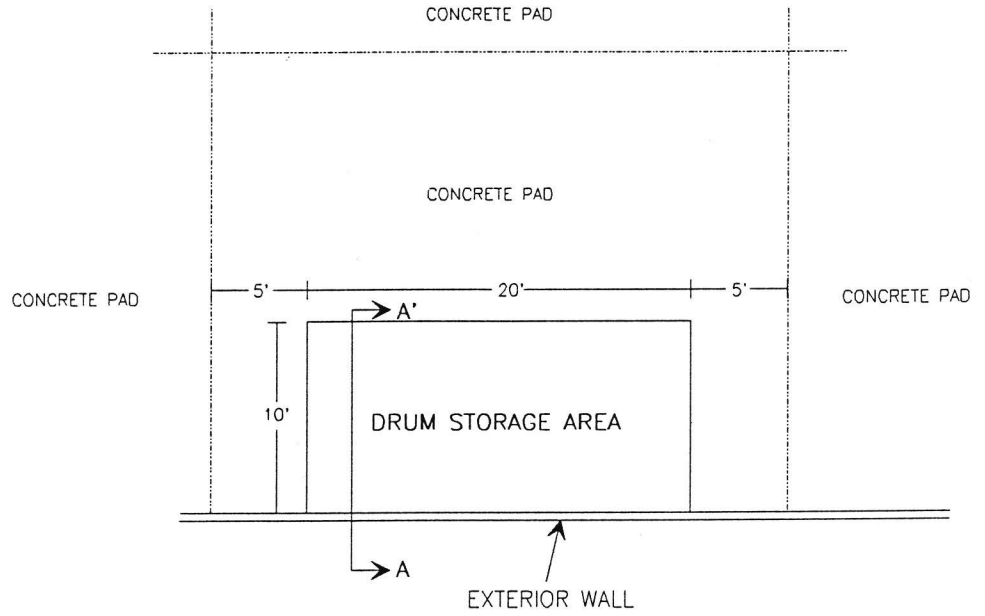


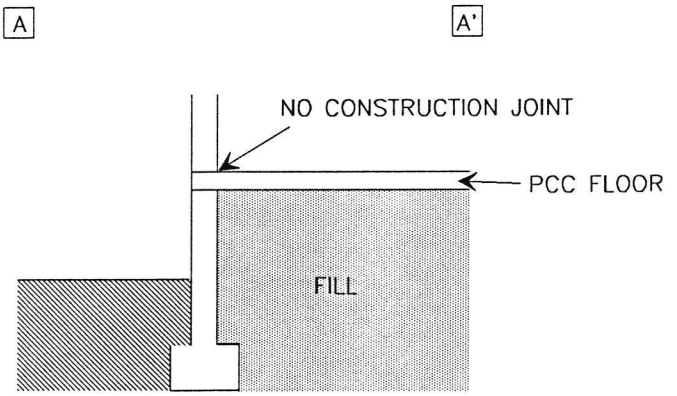
FIGURE 2.
SITE SKETCH
PRIES ENTERPRISES
701 17TH STREET
INDEPENDENCE, IOWA
PROJECT NO. 42925026
FILE# 42925026 (1-3)

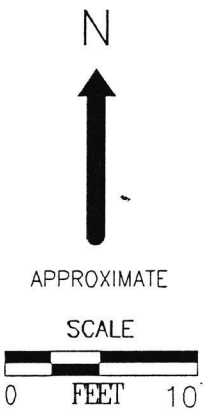
Terracon

PLAN VIEW



CROSS SECTION VIEW





LEGEND

CONSTRUCTION JOINT

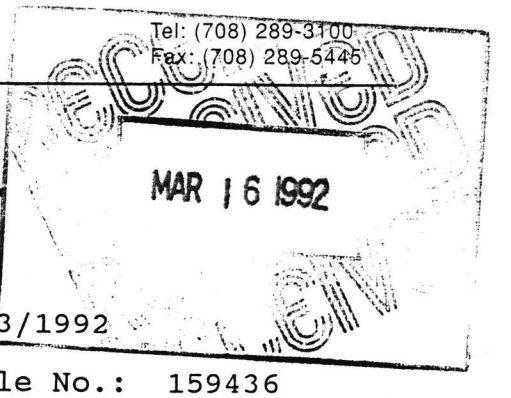
FIGURE 3.
DRUM STORAGE AREA SKETCH
PRIES ENTERPRISES
701 17TH STREET
INDEPENDENCE, IOWA
PROJECT NO. 42925026
FILE# 42925026 (5)

APPENDIX B
Analytical Results

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445



ANALYTICAL REPORT

Mr. Bob Hoffman
TERRACON CONSULTANTS
4480 48th Av. Suite 3
Rock Island, IL 61201

03/13/1992

Sample No.: 159436

Job No.: 92.0942

Sample Description: 1; Residual Solids (Floor)
42925026;Pries Enterprises

Date Taken: 02/27/1992
Time Taken:
IEPA Cert. No.: 100221

Date Received: 02/28/1992
Time Received: 10:00
WDNR Cert. No.: 999447130

Solids, Total	99.51	%
Chromium, AA	81.7	ug/g

Results are on a dry weight basis.

Kelly Jones

Kelly Jones
Project Manager

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

ANALYTICAL REPORT

Mr. Bob Hoffman
TERRACON CONSULTANTS
4480 48th Av. Suite 3
Rock Island, IL 61201

03/13/1992

Sample No.: 159437

Job No.: 92.0942

Sample Description: 2; Wash Water #1
42925026;Pries Enterprises

Date Taken: 02/27/1992
Time Taken:
IEPA Cert. No.: 100221

Date Received: 02/28/1992
Time Received: 10:00
WDNR Cert. No.: 999447130

Chromium, AA	1.02	mg/L

Kelly Jones
Project Manager

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

ANALYTICAL REPORT

Mr. Bob Hoffman
TERRACON CONSULTANTS
4480 48th Av. Suite 3
Rock Island, IL 61201

03/13/1992

Sample No.: 159438

Job No.: 92.0942

Sample Description: 3; Wash Water #2
42925026;Pries Enterprises

Date Taken: 02/27/1992
Time Taken:
IEPA Cert. No.: 100221

Date Received: 02/28/1992
Time Received: 10:00
WDNR Cert. No.: 999447130

Chromium, AA	0.564	mg/L

Kelly Jones
Project Manager

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

ANALYTICAL REPORT

Mr. Bob Hoffman
TERRACON CONSULTANTS
4480 48th Av. Suite 3
Rock Island, IL 61201

03/13/1992

Sample No.: 159439

Job No.: 92.0942

Sample Description: 4; Rinse Water
42925026;Pries Enterprises

Date Taken: 02/27/1992
Time Taken:
IEPA Cert. No.: 100221

Date Received: 02/28/1992
Time Received: 10:00
WDNR Cert. No.: 999447130

Chromium, AA	0.088	mg/L

Kelly Jones
Project Manager

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

ANALYTICAL REPORT

Mr. Bob Hoffman
TERRACON CONSULTANTS
4480 48th Av. Suite 3
Rock Island, IL 61201

03/13/1992

Sample No.: 159440

Job No.: 92.0942

Sample Description: 5; Rinse Water (Duplicate)
42925026;Pries Enterprises

Date Taken: 02/27/1992
Time Taken:
IEPA Cert. No.: 100221

Date Received: 02/28/1992
Time Received: 10:00
WDNR Cert. No.: 999447130

Chromium, AA	0.100	mg/L

Kelly Jones
Project Manager

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

ANALYTICAL REPORT

Mr. Bob Hoffman
TERRACON CONSULTANTS
4480 48th Av. Suite 3
Rock Island, IL 61201

03/13/1992

Sample No.: 159441

Job No.: 92.0942

Sample Description: 6; Blank (at Tap)
42925026;Pries Enterprises

Date Taken: 02/27/1992
Time Taken:
IEPA Cert. No.: 100221

Date Received: 02/28/1992
Time Received: 10:00
WDNR Cert. No.: 999447130

Chromium, AA	<0.040	mg/L

Kelly Jones

Kelly Jones
Project Manager

CHAIN - OF - CUSTODY RECORD

Sample Designation 1

Parts 1 of 1

Project PRIES ENTERPRISES

Project Number 42925026

Collector's Signature

Telephone: 309-788-1500

Collector's Address: 4470 48TH AVE CRT ROCK ISLAND, IL 61201

Sampling Location (Boring #, Well #, Etc.) RESIDUAL SOLIDS (FLOOR)

Date Sampled 2-27-92 Time Sampled

Sampling Method: ☐ Impeller Pump ☐ Bladder Pump ☐ Bailer ☒ COMPOSITE

Laboratory of Analysis; ☐ Pace Labs ☒ NET CEDAR FALLS → BARTLETT ☐

Standard Field Information:

Color N/A

Turbidity N/A ☐ Filtered ☐ Unfiltered

Container Preservation ☐ Acid ☒ Other NONE

Shipping Preservation ☒ Cooled ☐ Other

and Size of Containers 1 4 oz

State: ☒ Solid ☐ Liquid ☐ Gas

Other Field Information:

pH N/A Temperature N/A C/F

Specific Conductance N/A

Pre-Development: Yes No; Date N/A

Other Information: N/A

Sampled for: ☐ IA OA-1 ☐ IA OA-2 ☐ DIESEL ☐ WASTE OIL

☐ ILL BTEX ☒ OTHER: USEPA SW-846

TEST METHOD 6010 - Cr-Tot only per BOD 16 OCT 92 temp.

Relinquished By: (Signature)	Received By: (Signature)	Reason	Date	Time
Terracon		☒ Transport ☐ Analysis	2-27-92	13:35
			2-28-92	10:00
	Donna Tobian		3/27/92	13:35

Terracon

FORM COC-5/90

CHAIN - OF - CUSTODY RECORD

Sample Designation 2

Parts 1 of 1

Project PRICES ENTERPRISES

Project Number 42925026

Collector's Signature

Telephone: 309-788-1500

Collector's Address: 4470 48TH AVE CRT ROCK ISLAND, IL 61201

Sampling Location (Boring #, Well #, Etc.) WASH WATER #1

Date Sampled 2-27-92 Time Sampled

Sampling Method: ☐ Impeller Pump ☐ Bladder Pump ☐ Bailer ☒ COMPOSITE

Laboratory of Analysis; ☐ Pace Labs ☒ NET CEDAR FALLS TO BARTLETT ☐

Standard Field Information:

Color N/A

Turbidity N/A ☐ Filtered ☒ Unfiltered

Container Preservation ☒ Acid ☐ Other HNO_3

Shipping Preservation ☒ Cooled ☐ Other

and Size of Containers 1 QRT PLASTIC

State: ☐ Solid ☒ Liquid ☐ Gas

Other Field Information:

pH N/A Temperature N/A C/F

Specific Conductance N/A

Pre-Development: Yes No; Date N/A

Other Information: N/A

Sampled for: ☐ IA OA-1 ☐ IA OA-2 ☐ DIESEL ☐ WASTE OIL

☐ ILL BTEX ☒ OTHER: USEPA SW-846 TEST METHOD 6010 - Cr tot only per Bob 2-28-92

Relinquished By: (Signature)	Received By: (Signature)	Reason	Date	Time
Terracon		☒ Transport ☐ Analysis	2-27-92	13:35
			2-28-92	10:00
	Norma Tobian		3/27/92	13:35

Terracon

FORM COC-5/90

CHAIN - OF - CUSTODY RECORD

Sample Designation 3

Parts 1 of 1

Project Pries Enterprises

Project Number 42925026

Collector's Signature

Telephone: 309-788-1500

Collector's Address: 4470 48th Ave Ct Rock Island, IL 61201

Sampling Location (Boring #, Well #, Etc.) Wash Water # 2

Date Sampled 2-27-92 Time Sampled

Sampling Method: ☐ Impeller Pump ☐ Bladder Pump ☐ Bailer ☒ Composite

Laboratory of Analysis; ☐ Pace Labs ☒ NET Cedar Falls to Bartlett ☐

Standard Field Information:

Color N/A

Turbidity N/A ☐ Filtered ☐ Unfiltered

Container Preservation ☒ Acid ☐ Other HNO_3

Shipping Preservation ☒ Cooled ☐ Other

and Size of Containers 1 Qrt Plastic

State: ☐ Solid ☒ Liquid ☐ Gas

Other Field Information:

pH N/A Temperature N/A C/F

Specific Conductance N/A

Pre-Development: Yes No; Date N/A

Other Information: N/A

Sampled for: ☐ IA OA-1 ☐ IA OA-2 ☐ DIESEL ☐ WASTE OIL

☐ ILL BTEX ☒ OTHER: USEPA SW-846 Test Method 6010

Relinquished By: (Signature)	Received By: (Signature)	Reason	Date	Time
Terracon		☒ Transport ☐ Analysis	2-27-92	13:35
			2-28-92	10:00
	Donna Tobias		2/27/92	13:35

Cr Tot only Per Bob 2-28-92

Terracon

FORM COC-5/90

CHAIN - OF - CUSTODY RECORD

Sample Designation 4

Parts 1 of 1

Project PRIES ENTERPRISES

Project Number 4292502C6

Collector's Signature [signature]

Telephone: 309-788-1500

Collector's Address: 4470 48TH AVE CRT ROCK ISLAND, IL 61201

Sampling Location (Boring #, Well #, Etc.) RINSE WATER

Date Sampled 2-27-92

Time Sampled

Sampling Method: ☐ Impeller Pump ☐ Bladder Pump ☐ Bailer ☒ COMPOSITE

Laboratory of Analysis; ☐ Pace Labs ☒ NET CEDAR FALLS TO BARTLETT ☐

Standard Field Information:

Color N/A

Turbidity N/A ☐ Filtered ☐ Unfiltered

Container Preservation ☒ Acid ☐ Other HNO_3

Shipping Preservation ☒ Cooled ☐ Other

and Size of Containers 1 QRT PLASTIC

State: ☐ Solid ☒ Liquid ☐ Gas

Other Field Information:

pH N/A Temperature N/A C/F

Specific Conductance N/A

Pre-Development: Yes No; Date N/A

Other Information: N/A

Sampled for: ☐ IA OA-1 ☐ IA OA-2 ☐ DIESEL ☐ WASTE OIL

☐ ILL BTEX ☒ OTHER: USEPA SW-846 TEST METHOD 6010

Cr tot only

Per Bob 2-28-92

Relinquished By: (Signature)	Received By: (Signature)	Reason	Date	Time
[signature] Terracon		☒ Transport ☐ Analysis	2/27/92	13:35
	[signature]		2/28/92	10:00
	Norma Tobian		3/2/92	13:35

Terracon

FORM COC-5/90

CHAIN - OF - CUSTODY RECORD

Sample Designation 5

Parts 1 of 1

Project Price Enterprises

Project Number 42925026

Collector's Signature [signature]

Telephone: 309-788-1500

Collector's Address: 4470 48th Ave Ct Rock Island, IL 61201

Sampling Location (Boring #, Well #, Etc.) Rinse Water (Duplicate)

Date Sampled 2-27-92

Time Sampled

Sampling Method: ☐ Impeller Pump ☐ Bladder Pump ☐ Bailer ☒ Composite

Laboratory of Analysis; ☐ Pace Labs ☒ NET Cedar Falls To Bartlett ☐

Standard Field Information:

Color N/A

Turbidity N/A ☐ Filtered ☐ Unfiltered

Container Preservation ☒ Acid ☐ Other HNO_3

Shipping Preservation ☒ Cooled ☐ Other

and Size of Containers 1 Qrt Plastic

State: ☐ Solid ☒ Liquid ☐ Gas

Other Field Information:

pH N/A Temperature N/A C/F

Specific Conductance N/A

Pre-Development: Yes No; Date N/A

Other Information: N/A

Sampled for: ☐ IA OA-1 ☐ IA OA-2 ☐ DIESEL ☐ WASTE OIL

☐ ILL BTEX ☒ OTHER: USEPA SW-846 Test Method 6010

Relinquished By: (Signature)	Received By: (Signature)	Reason	Date	Time
[signature] Terracon	[signature]	☒ Transport ☐ Analysis	2-27-92	13:35
	[signature]		2/28/92	10:00
	Norma Tobian		2/27/92	13:35

Grab only Per Bob 2-28-92

Terracon

FORM COC-5/90

CHAIN - OF - CUSTODY RECORD

Sample Designation 6

Parts 1 of 1

Project PRIES ENTERPRISES

Project Number 4292502G

Collector's Signature [signature]

Telephone: 309-788-1500

Collector's Address: 4470 48TH AVE CRT ROCK ISLAND IL 61201

Sampling Location (Boring #, Well #, Etc.) BLANK (@ TRC)

Date Sampled 2-27-92

Time Sampled

Sampling Method: ☐ Impeller Pump ☐ Bladder Pump ☐ Bailer ☒ COMPOSITE

Laboratory of Analysis; ☐ Pace Labs ☒ NET CEDAR FALLS TO BARTLETT ☐

Standard Field Information:

Color N/A

Turbidity N/A ☐ Filtered ☒ Unfiltered

Container Preservation ☒ Acid ☐ Other HNO_3

Shipping Preservation ☒ Cooled ☐ Other

and Size of Containers 1 QRT PLASTIC

State: ☐ Solid ☒ Liquid ☐ Gas

Other Field Information:

pH N/A Temperature N/A C/F

Specific Conductance N/A

Pre-Development: Yes No; Date N/A

Other Information: N/A

Sampled for: ☐ IA OA-1 ☐ IA OA-2 ☐ DIESEL ☐ WASTE OIL

☐ ILL BTEX ☒ OTHER: USEPA SW-846 TEST METHOD 6010

Relinquished By: (Signature)	Received By: (Signature)	Reason	Date	Time
[signature] Terracon		☒ Transport ☐ Analysis	2-27-92	13:35
	[signature]		2-28-92	10:00
	Norma Tobian		2/27/92	13:35

Cr tot only per Bob 2-28-92

Terracon

FORM COC-5/90

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

INORGANIC QC SUMMARY

Mr. Bob Hoffman
TERRACON CONSULTANTS
4480 48th Ave.
Suite 3
Rock Island IL
61201

Job No. 92.0942

Client Reference #	NET Sample #
1; Residual Solids	159436
2; Wash Water #1	159437
3; Wash Water #2	159438
4; Rinse Water	159439
5; Rinse Water Dup.	159440
6; Blank at tap	159441

Reviewed by: 3-19-92

Ray Kalicki
QA/QC Coordinator

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

Parameter	Date	Calibration Blank (mg/L)	INITIAL CALIBRATION VERIFICATION STANDARD (ICV) Found/True (mg/L)	Recovery %	Control Limit (mg/L)
Chromium	03-12-92	<0.040	0.152/0.152	100.	0.123-0.177

Comments:

NET® NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

Parameter	Procedure Blank (mg/L)	PROCEDURE STANDARD Found/True (mg/L)	PROCEDURE STANDARD % Recovery	CONTINUING CALIBRATION STANDARD Found/True (mg/L)	CONTINUING CALIBRATION STANDARD % Recovery
Chromium	<0.040	2.20/2.00	110.	0.515/0.500	103.

Comments:

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

		MS/MSD Information					
Parameter	Sample #	Native Sample Value (mg/L)	Amount of Spike Added (mg/L)	*Matrix Spike Value (mg/L)	*Matrix Spike Dup. (mg/L)	% Rec.	RPD %
Chromium	159472	0.081	1.000	1.049	1.049	105.	0.0

* Matrix Spike and Matrix Spike Duplicate values are concentrations of recovered spike, after subtracting the Native Sample Value.
**Where matrix spikes are not practical, duplicate samples are reported.

Comments:

NET NATIONAL ENVIRONMENTAL TESTING, INC.®

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

DEFINITIONS OF TERMS

Calibration Blank - Reagent Blank; made up of the same solution as samples and standards but not carried through a preparation step.

Initial Calibration Verification Standard (ICV) - A known standard concentration, from an outside source. Control limits are +/- 1.96 standard deviations from the Mean, equivalent to EPA acceptance limits.

Procedure Blank - A Calibration Blank carried through the same procedures as the samples, including the preparation step(s). The Procedure Blank is not subtracted from the samples.

Procedure Standard - A Calibration Standard carried through the same procedures as the samples, including the preparation step(s).

Continuing Calibration Standard - An Internal Standard from the same reagent source as the Calibration Curve, but prepared separately.

Native Sample Value - The concentration measured from the sample aliquot which is split into three portions: the unspiked Native Sample, the Matrix Spike Sample, and the Matrix Spike Duplicate.

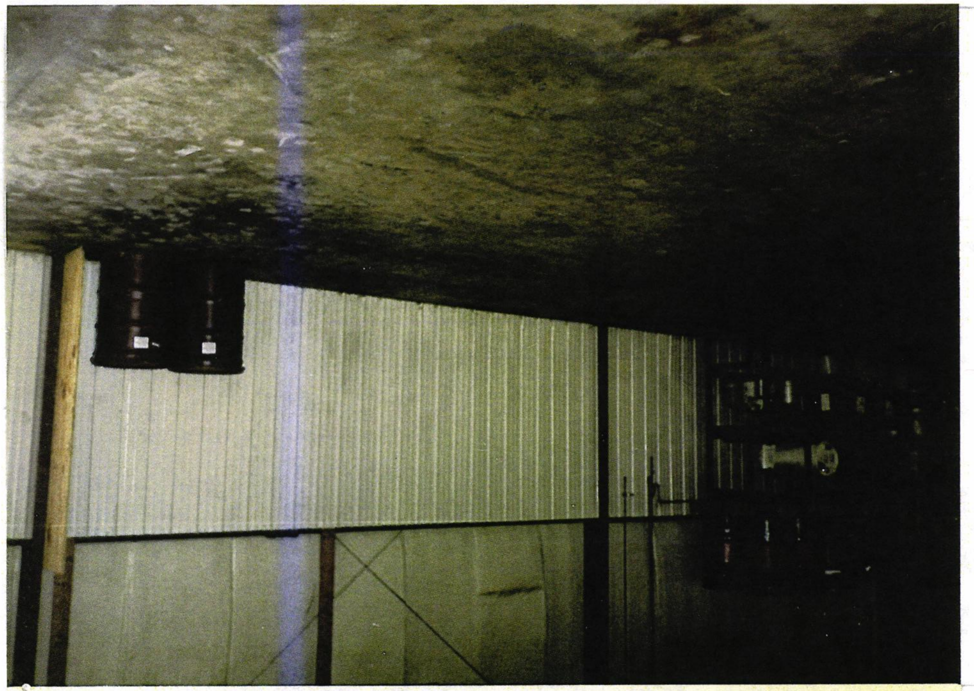
Matrix Spike (MS) and Matrix Spike Duplicate (MSD) - One sample is split into three portions: a known spike concentration is added to two splits - the Matrix Spike Sample and the Matrix Spike Duplicate. Percent Recovery (%R) is calculated by dividing the amount of recovered spike by the expected spike value.

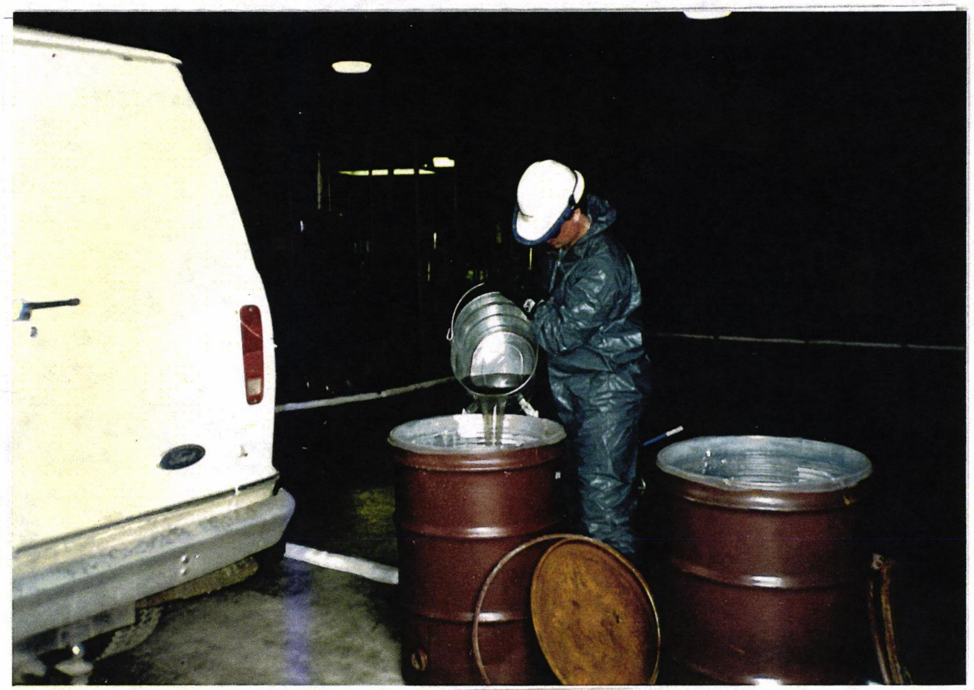
Relative Percent Difference (RPD) - Precision is measured as RPD between the two spiked aliquots. RPD = (the difference/divided by the average) x 100.

APPENDIX C
Photographic Log

Photographic Descriptions

1. The former drum storage area.
2. Sweeping down the wall.
3. The area setup prior to mopping.
4. Mopping
5. Sampling wash water.
6. Containerizing wash water.
7. Containerizing absorbent pads.
8. The area after cleaning.





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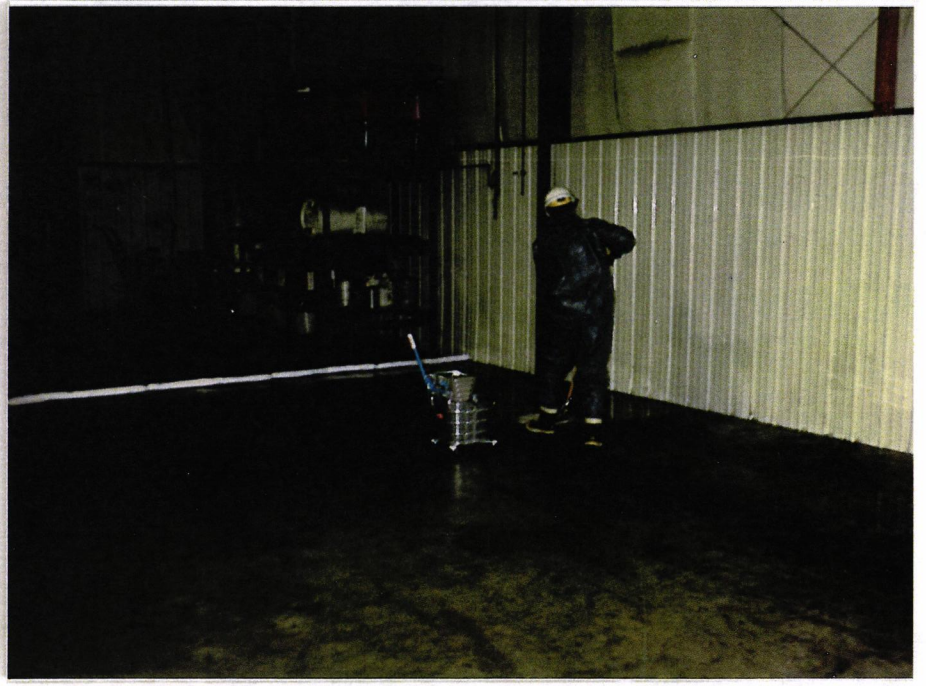


APPENDIX D
Owner Closure Certification

Independence Plant
701 17th Street S.E.
Independence, IA

Waterloo Plant
3136 Wagner Road
Waterloo, IA

Pries Enterprises, Inc.

Aluminum Extrusions and Fabrications
Box 777, 701 17th Street S.E.
Independence, Iowa 50644
Phone (319) 334-7068
FAX (319) 334-7060

OWNER CLOSURE CERTIFICATION

The undersigned, Pries Enterprises, Inc. a privately owned corporation, incorporated under the laws in the State of Iowa, which formerly operated a hazardous waste storage facility of F019 and D007 waste, (hereinafter "Facility") known as Pries, located at 701 17th Street S.E., Independence, Iowa in Buchanan County, Iowa, has completed and permanently ceased the active operation of the facility and has fully implemented all measures relating to the closure of the facility as set forth in the Closure Plan approved by USEPA Region VII for the sail facility.

NOW, THEREFORE, I, Merle J. McMahon, President of Pries Enterprises, Inc. hereby swear and affirm that the above-named facility's Closure Plan approved in writing by Mr. David Wagner, Director, Waste Management Division of the U.S.E.P.A. Region VII, on January 9, 1992. All measures relating to the closure of the facility required by the Closure Plan and the rules and regulations of CFR Title 40, 265.115 have been fully implemented and that to the best of my knowledge, no violations continue to exist that may have arisen prior to closure.

Merle J. McMahon
(Signature)

President
(Title)

Pries Enterprises, Inc.
P.O. Box 777
701 17th Street S.E.
Independence, Iowa 50644
(Address)

Taken, sworn and subscribed before me, this 3rd day of April A.D. 1992.

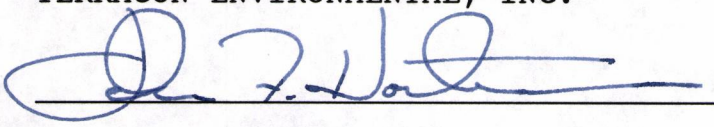
Marvalyn J. Kelly

NOTARIAL SEAL IOWA
MARVALYN J. KELLY
MY COMMISSION EXPIRES
September 23, 1994

CLOSURE CERTIFICATION STATEMENT

I, John F. Hartwell, a Professional Engineer registered in the State of Iowa and as an employee of Terracon Environmental, Inc., hereby state that I have reviewed the Hazardous Waste Management Units Closure Plan of Pries Enterprises (Pries), located at 701 17th Street S.E., Independence, Iowa, that I am familiar with the rules and regulations of 40 CFR 265 Subpart G pertaining to closure of such facility and that I have directly supervised Terracon personnel who performed the cleaning and testing services for Pries in conjunction with the closure of the aforementioned facility, and that to the best of my knowledge, the closure of the aforementioned facility has been performed in accordance with the facility's closure plan approved with modifications in writing by the United States Environmental Protection Agency on January 9, 1992 and the rules and regulations of 40 CFR 265.112.

TERRACON ENVIRONMENTAL, INC.



13 APRIL 1992

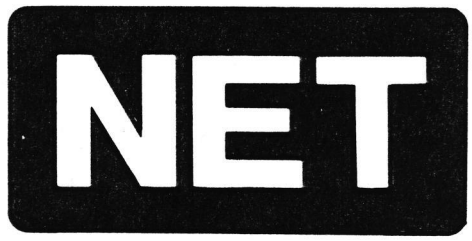
John F. Hartwell, P.E. (Date)

Iowa #9451
(Professional Engineering License Number

2211 S. 156th Circle, Omaha, Nebraska 68130

(402) 330-2202
(Telephone Number)

APPENDIX E
NET Quality Assurance Plan


NET

QUALITY ASSURANCE PLAN

National Environmental Testing
Bartlett Division
850 West Bartlett Road
Bartlett IL 60103

Approved by:

Coordinator
Quality Assurance

Vice-President
Quality Assurance

Division Manager

This is copy No. _____ of _____ copies.

Specific project plans may vary.

SECTION 2. TABLE OF CONTENTS

LISTING OF TABLES

SECTION 3. PLAN DESCRIPTION

NET's goal is to be the leader in Environmental Services, achieved in part, through its quality assurance plan. The following sections describe various laboratory operations and our efforts to assure the highest quality in each area. Each operation is critical for the success of our lab. Section 5, Quality Assurance Objectives, is the cornerstone of this document in its description of internal quality control checks, frequency and corrective action.

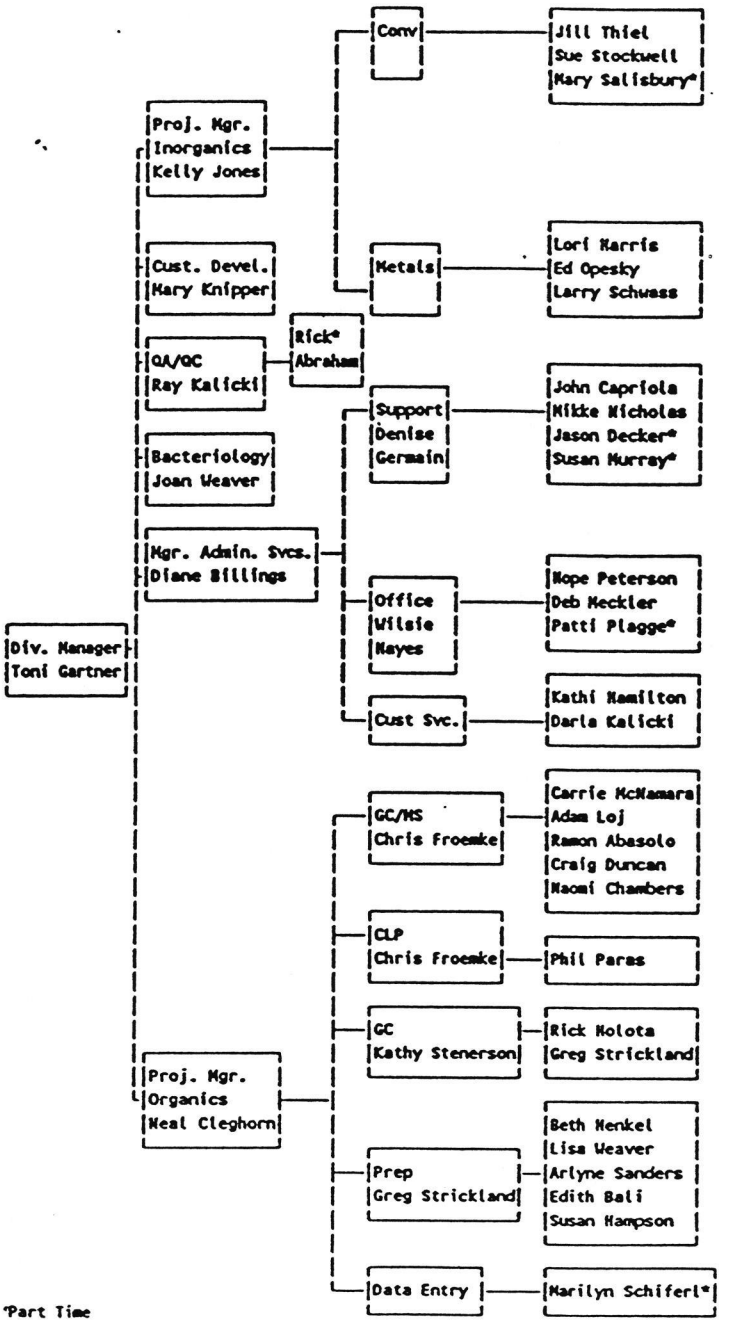
The following important information is included in the laboratory's Statement of Qualifications and will not be found in one of the following sections:

- Instrumentation List
- Methodology List
- Reporting Limits
- Resumes of Key Personnel
- Federal, State and Local Certifications

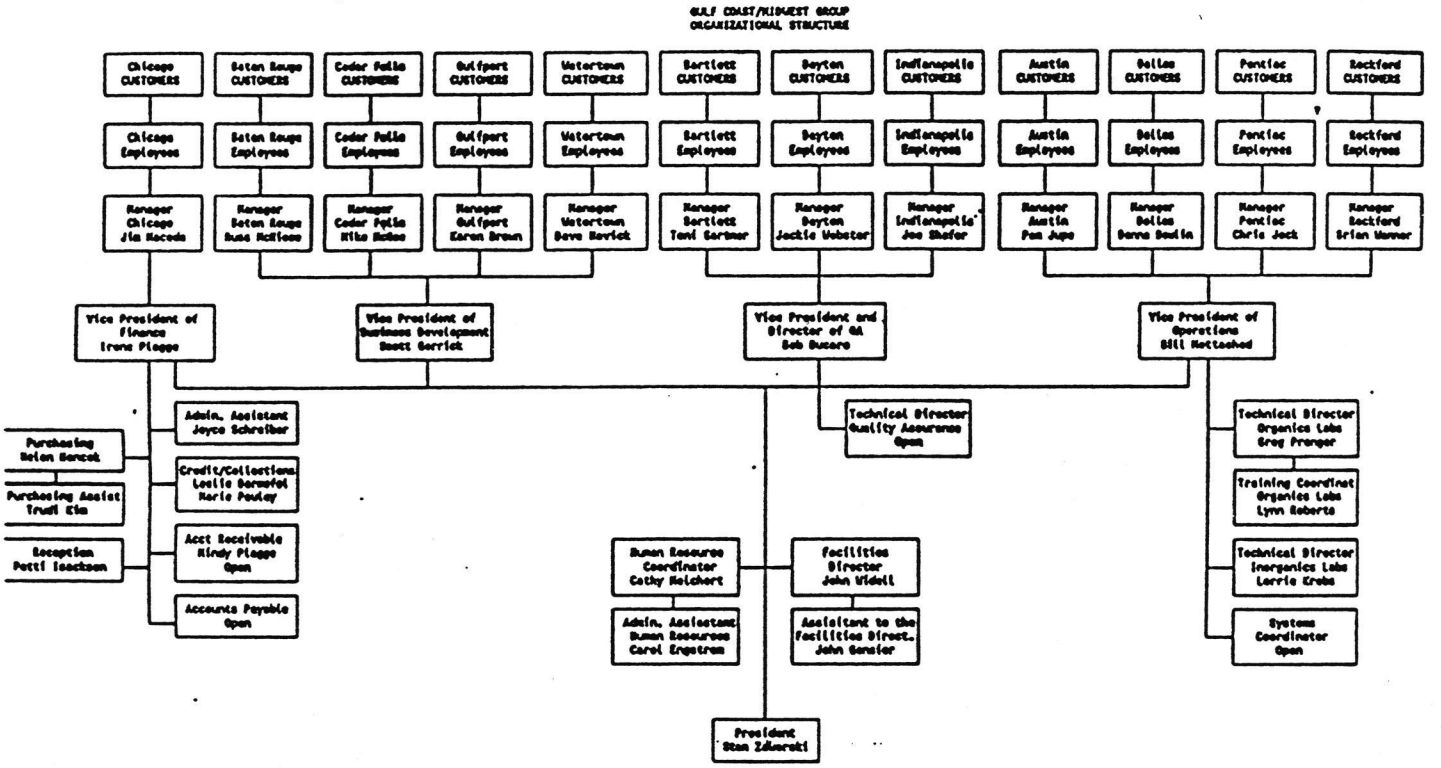
SECTION 4. ORGANIZATION

Organizational charts for NET Gulf Coast/Midwest, Inc. Bartlett Division; NET Gulf Coast/Midwest Regional; and NET Corporate are provided here.

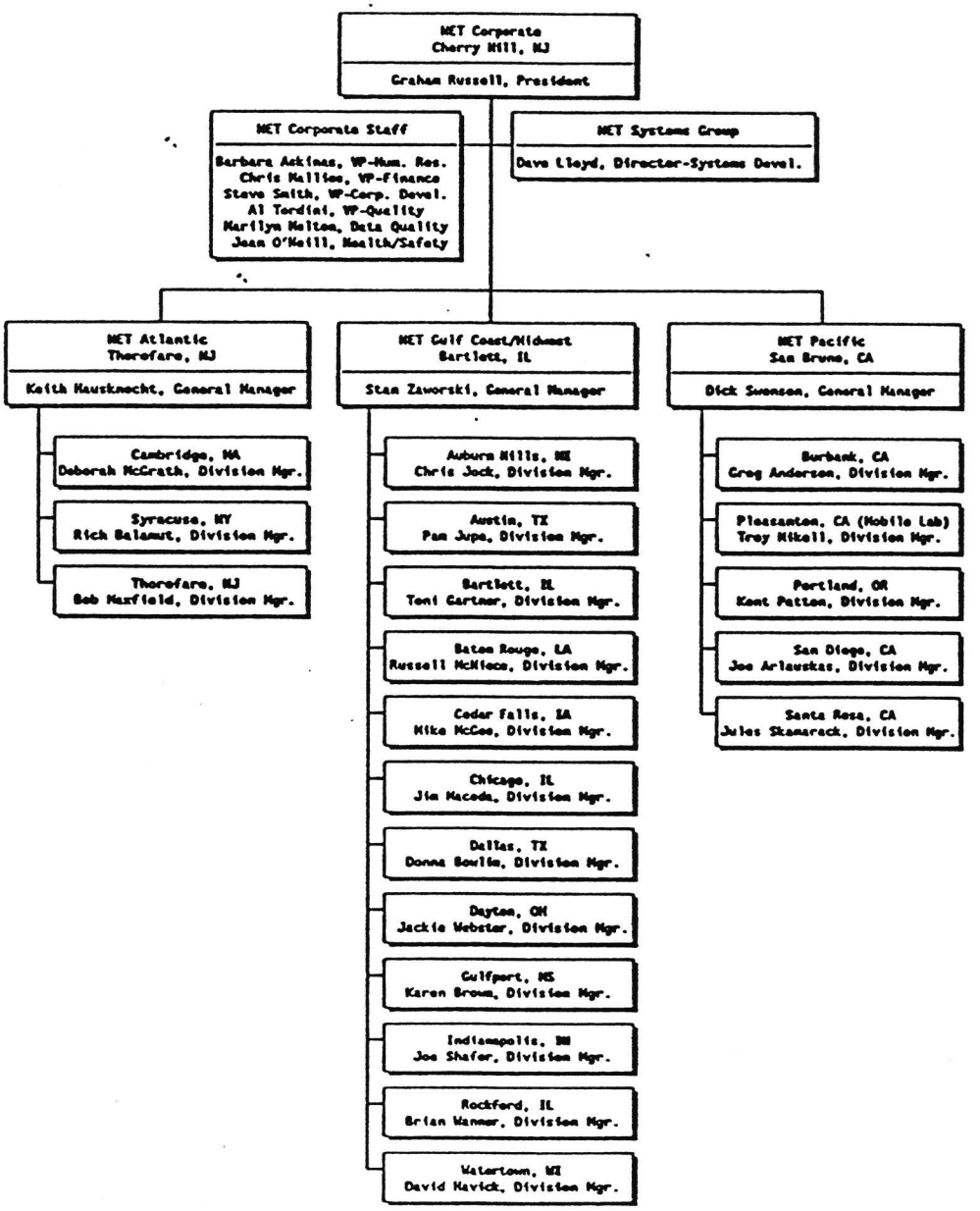
BARTLETT ORGANIZATIONAL CHART
July 1991



*Part Time


GULF COAST/MIDWEST GROUP
ORGANIZATIONAL STRUCTURE
Chicago CUSTOMERS
Baton Rouge CUSTOMERS
Cedar Falls CUSTOMERS
Gulfport CUSTOMERS
Watertown CUSTOMERS
Bartlett CUSTOMERS
Dayton CUSTOMERS
Indianapolis CUSTOMERS
Austin CUSTOMERS
Dallas CUSTOMERS
Pontiac CUSTOMERS
Rockford CUSTOMERS
Chicago Employees
Baton Rouge Employees
Cedar Falls Employees
Gulfport Employees
Watertown Employees
Bartlett Employees
Dayton Employees
Indianapolis Employees
Austin Employees
Dallas Employees
Pontiac Employees
Rockford Employees
Manager Chicago Jim Macedo
Manager Baton Rouge Russ Mathews
Manager Cedar Falls Mike Mahon
Manager Gulfport Karen Brown
Manager Watertown Dave Bevlot
Manager Bartlett Toni Gartner
Manager Dayton Jackie Webster
Manager Indianapolis Joe Shafer
Manager Austin Pam Jupe
Manager Dallas Donna Boudin
Manager Pontiac Chris Jack
Manager Rockford Brian Wanner
Vice President of Finance Irene Piagge
Vice President of Business Development Brent Garrick
Vice President and Director of QA Bob Bucaro
Vice President of Operations Bill Mottashed
Admin. Assistant Joyce Schreiber
Purchasing Helen Barczak
Purchasing Assist Trudi Elm
Credit/Collections Leslie Barnefol Marie Pouley
Reception Patti Isackson
Acct Receivable Kindy Piagge Open
Accounts Payable Open
Technical Director Quality Assurance Open
Human Resource Coordinator Cathy Reichert
Admin. Assistant Human Resources Carol Engstrom
Facilities Director John Widell
Assistant to the Facilities Direct. John Gensler
President Stan Zdunski
Technical Director Organics Labs Greg Prenger
Training Coordinat Organics Labs Lynn Roberts
Technical Director Inorganics Labs Lorrie Krebs
Systems Coordinator Open

National Environmental Testing, Inc.
Organization Chart
September 1991



SECTION 5. QUALITY ASSURANCE OBJECTIVES

5.1. INTRODUCTION

The Quality Assurance Objective of NET Midwest, Inc. is to be the leader in providing analytical data of known, high quality.

In general, each method specifies the use and frequency of blanks, standards and spike samples.

Inorganic Quality Control (QC) samples are outlined in Tables 5.1.1. through 5.1.5. A suggested analytical sequence is outlined in Table 5.2. Corrective action for out of control QC Samples is addressed in Table 5.3.

Organic QC samples are outlined in Tables 5.4. and 5.6. A suggested analytical sequence is outlined in both Tables 5.5. and 5.7. Corrective action for out of control QC samples is addressed in Tables 5.8. and 5.9.

As stated, the objective of the NET Quality Assurance Program is to provide data of known, high quality. To accomplish this, NET Midwest will:

- Maintain an effective, ongoing QA/QC program that measures and verifies laboratory performance,
- Provide sufficient flexibility to allow controlled changes in routine methodology to meet project specific data requirements,
- Recognize, as soon as possible, and provide corrective action for any factors which adversely affect data quality,
- Monitor operational performance of the laboratory on a routine basis and provide corrective action as needed, and
- Maintain complete records of chain of custody, raw data, laboratory performance, and completed analyses to support reported data.

5.2. LEVEL OF QA EFFORTS

5.2.1. Accuracy and Precision

Accuracy is a measure of the degree of agreement between an analyzed value and the true or expected reference value. Accuracy is usually expressed as Percent Recovery(%R). Precision is a measure of the mutual agreement among individual measurements of the same parameter under similar conditions. Precision is usually measured as Relative Percent Difference(RPD). An accurate archer will hit the bull's eye with his arrow. A precise archer may not hit the bull's eye; but, he will group his arrows, landing them in the same area of the target. Excellent Precision + Excellent Accuracy + The Highest Quality Stock Solutions = The Highest Quality of Data. An accurate and precise archer, provided with a good bow and high quality arrows, will land all his arrows on the bull's-eye.

Accuracy and Precision, in the laboratory, are assessed by the regular analysis of standard, spike, and duplicate samples.

5.2.2. Completeness

Completeness is a measure of the amount of valid data obtained from the analytical measurement system. It is defined as the total number of samples taken for which acceptable analytical data are generated, divided by the total number of samples collected, multiplied by 100. Every attempt will be made to generate completely valid data. However, it is recognized that some samples may be invalidated in the laboratory and that some results may be deamed questionable based on internal QC results.

5.2.3. Representativeness

Representativeness is a measure of how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the sample. Sample handling protocols (eg., storage, preservation and transportation) have been developed to preserve the representativeness of the collected samples. Proper documentation will establish that that protocols have been followed and sample identification and integrity have been assured. Every attempt will be made to ensure that the aliquots taken for analyses are representative of the samples received.

5.2.4. Comparability

The generation of comparable data is the goal of any analytical program. This characteristic implies strict adherence to published analytical protocols and use of standard reporting units. NET's QA/QC program is structured to ensure adherence to the proper analytical protocols and to fully document these procedures. The QA objective is that all data resulting from these analyses be comparable with other measurements made by NET or other organizations.

5.2.5. Performance Evaluation (PE) Samples

Double-blind PEs are evaluated quarterly, by all NET labs, as part of NET's Internal Testing Program. Any result that is out of control for a parameter (more than +/- 2.1 SDs away from the recovered mean) is flagged and corrective action is taken.

As well as these internal PEs, NET is able to test its performance on external performance samples: PEs from public certifying agencies such as USEPA WP and WS studies, USEPA CLP for Organics, Illinois EPA, state DNRs, local villages for NPDES permitting, and various round-robin performance samples for private certifications.

5.2.6. Quality Control Charts

A Quality Control Tabular Chart shall be maintained for inorganic parameters where the QC Chart applies. This chart is a daily record of QC sample performance. When a parameter has been run enough times to fill twenty points on the daily control chart, the Mean and SD are calculated for that QC sample. Control Limits are set as three times the SD about the Mean and Warning Limits are two times the SD about the Mean. Next, a new page is started with the actual Control Limits in place from the previous twenty runs. The statistical control limits, when in place, will be used as acceptance ranges rather than the interim control limits listed in the following tables.

The following describes the minimum criteria for an Out-of-Control Condition:

*1. Any one point is outside the control limit.
*2. Any three consecutive points are outside the warning limits.
3. Any seven consecutive points are on the same side of the centerline.
*4. Any six consecutive points are such that each point is larger (smaller) than its immediate predecessor.
*5. Any obvious cyclic pattern is seen in the points.

*Control chart criteria taken from Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program. NEESA 20.2-047B. June 1988. (See reference #7, section 5.5)

TABLE 5.1. INORGANIC QC SAMPLES

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
5.1.1. CALIBRATION		
Flame AA - 3-standard calibration or per manufacturer's suggestions.	correlation coefficient (r) > 0.995. Back-calculated calibration standards: High conc. 90-110% of true value. Mid conc. 90-110% of true value. Low conc. 80-120% of true value.	Once at the beginning of each run.
ICP - 2-standad calibration with a calibration blank as the third point - not forced through zero. Or per manufacturer's suggestions.	r > 0.9995. Back-calculated calibration standards: High conc. 90-110% of true value. Low conc. 80-120% of true value.	Once at the beginning of each run.
Wet Chemistry - 3-standard daily calibration or a 5-point curve on file.	r > 0.995. Back-calculated calibration standards: High conc. 90-110% of true value. Mid conc. 90-110% of true value. Low conc. 80-120% of true value.	Once at the beginning of each run. 5-point curve run periodically (change in analyst, instrument, reagents, etc...)

TABLE 5.1. INORGANIC QC SAMPLES
(continued)

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
5.1.2. BLANKS		
Calibration Blank (CB) - or Instrument Blank	Absolute Value of CB < Reporting Limit (RL). The instrument is set to zero with the calibration blank.	One CB at the beginning of an analysis. One to close out an analysis. And one CB every ten samples.
Procedure Blank (PB) - A reagent blank that undergoes digestion or distillation steps.	Absolute Value of the PB < the RL. Do not subtract the PB from samples. If the PB is > RL, then the following procedures must take place: Check the lowest concentration of the analyte of concern. If the PB is at least 10x less than the lowest concentration, then your PB is in control. Do not subtract your PB. If the PB is not 10x less than the lowest concentration of analyte, then the PB is out of control.	One PB per batch or per sample matrix. A sample batch shall contain no more than 20 samples and shall be of the same sample matrix.
Trip Blank or Field Blank	Field or trip blanks are analyzed as requested client or field sampling team. Acceptance limits apply to the sample batch.	

TABLE 5.1. INORGANIC QC SAMPLES
(continued)

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
5.1.3. STANDARDS		
Initial Calibration Verification(ICV) - Also known as a Standard Reference Material (SRM) - An independent standard purchased from an outside source.	The Mean +/- 2.1 standard deviations. The acceptance range is established according to statistics reported by the independent agency supplying the standard.	Immediately following a calibration Curve to verify that curve.
Reporting Limit Verification Standard (RLVS) - A standard at or near the Reporting Limit (RL).	75-125% of the true value. Warning.	Once at the beginning of an analytical run. Applies to trace metals analyses.
Continuing Calibration Verification Standard (CCV) - Mid-range standard.	90-110% of the true value.	One CCV at the beginning of a run, as part of the calibration curve. One at the end, to close out the run. And one CCV for every ten samples.
Laboratory Control Standard (LCS) - A standard that undergoes digestion or distillation steps.	80-120% of true value.	One LCS per sample batch. A sample batch shall contain no more than twenty samples of the same matrix.

TABLE 5.1. INORGANIC QC SAMPLES
(continued)

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
5.1.3. STANDARDS (continued)		
ICP Interference Check Sample - Checks the ICP ability to accurately correct for baseline adjustments in the prescence of high concentrations of interferents. This sample should contain analytes and interferents in these concentrations. ----->	80-120% of the true value.	*At the beginning of an ICP run.

Analyte	(mg/L)	Interferent	(mg/L)
Ag	1.0	Al	500
Ba	0.5	Ca	500
Be	0.5	Fe	200
Cd	1.0	Mg	500
Co	0.5		
Cr	0.5		
Cu	0.5		
Mn	0.5		
Ni	1.0		
Pb	1.0		
V	0.5		
Zn	1.0		

*Frequency for the ICP Interference Check Sample applies to silmultaneous ICP operation. For sequential ICP analysis, this sample is analyzed when selecting the wavelength and creating the element file.

TABLE 5.1. INORGANIC QC SAMPLES
(continued)

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
5.1.4. SPIKES		
Matrix Spike (MS) and Matrix Spike Duplicate(MSD) - Digested or distilled the same as samples.	75-125% of the true value for MS. Warning. <20% Relative Percent Difference (RPD) for MSD. Warning.	Matrix spike analyzed once every ten samples. MS/MSD performed once every sample batch. A sample batch shall contain no more than twenty samples of the same matrix.
5.1.5. MISCELLANEOUS		
ICP Linear Range Standard - A standard concentration at the height of that element's linear range.	90-110% of the true value.	Once per analytical run, if necessary, and once per matrix.

TABLE 5.2. SUGGESTED ANALYTICAL SEQUENCE - INORGANICS

1. Calibration
2. Calibration Blank (CB)
3. Initial Calibration Verification (ICV) - External Standard
4. Reporting Limit Verification Standard (RLVS) - when applicable
5. ICP Interference Check Sample (for ICP only)
6. Procedure Blank (PB)
7. Laboratory Control Standard (LCS) - May be the same as a digested or distilled ICV.

(Steps 6 & 7 apply if the samples have been prepped.)

8. Samples (ten samples between CB step 2 and CCV step 10 including QC samples)
9. Matrix Spike (MS)
10. Continuing Calibration Verification Standard (CCV)
11. Calibration Blank (CB)
12. 9 Samples (ten samples between CB step 11 and CCV step 14 including QC samples)
13. Martrix Spike Duplicate (MSD)
14. CCV
15. CB
16. ICP Linear Range Standard (for ICP only)
17. Repeat steps 6 & 7
18. Samples
19. MS
20. CCV
21. CB
22. Samples
23. MSD
24. CCV
25. CB
26. ICP Linear Range Standard
27. Steps 6 & 7 if starting on a new prepped batch

repeat
cycle....

TABLE 5.3. CORRECTIVE ACTION FOR OUTLYING QC SAMPLES - INORGANICS

QC SAMPLE	ACTION TO TAKE IF OUTSIDE CONTROL LIMITS
Calibration Curve	Solve problem. Restart analysis. Recalibrate if necessary.
Calibration Blank	Solve problem. Restart analysis. Recalibrate if necessary.
Initial Calibration Verification	Solve problem. Restart analysis. Recalibrtate if necessary.
Reporting Limit Verification Standard	See your Supervisor.
Procedure Blank	Rerun Procedure Blank. If still out of control, check prep. procedure for possible errors. See your Supervisor. Cross-reference any reanalyses.
Procedure Standard (LCS)	Rerun Procedure Standard. If still out of control, check prep procedure for possible errors. See your Supervisor. Cross-reference any reanalyses.
Matrix Spikes	See your Supervisor.
Matrix Spike Duplicate	See your Supervisor.
Continuing Calibration Verification	Rerun CCV once. If still out of range, rerun the batch of ten samples to which this standard applies. Cross-reference any reanalyses.
Continuing Calibration Blank	Rerun CCB once. If still out of range, rerun the batch of ten samples to which this blank applies. Cross-reference any reanalyses.
ICP Interference Check Sample	Rerun sample. If it is still out of control, check the element file, background correction points and wavelength selection (sequential ICP). See your supervisor.

TABLE 5.4. VOLATILE AND SEMI-VOLATILE QC SAMPLES - GC/MS

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
Tune Check - BFB for VOA - DFTPP for semi-VOA	Ions must pass USEPA criteria. See SOP and CLP Form 5.	Once every 12 hours.
Continuing Calibration Verification Compounds (CCCs)	Per SOP. CCC and SPCC compounds. See CLP Form 6 or 7.	After Tune Check. Compare CCCs against the 5-standard calibration curve on file.
Preparation Blank or Method Blank	No target compounds present, except common lab solvents at less than 5 times the reporting limit.	Once per 12 hour sequence or per matrix type or as provided by extraction protocol.
Matrix Spikes (MS) and Matrix Spike Duplicates (MSD)	Advisory USEPA criteria for spike recovery ranges. Per SOP. See CLP Form 3.	Once per 20 samples.
Surrogate Spike	Must meet USEPA Control Limits as required by the specific method. See CLP Form 2.	Included with each sample.
Internal Standards	Must meet USEPA Criteria for Internal Standard Area Range. See CLP Form 8.	Included with each sample.

TABLE 5.5. SUGGESTED ANALYTICAL SEQUENCE FOR GC/MS
(also see specific SOPs)

VOLATILES
1. 4-BFB Check
2. Continuing Calibration Standard
3. Method Blank
4. MS & MSD
5. Samples

(Samples must be run within 12 hours of the BFB tune.)

SEMI-VOLATILES
1. DFTPP Check
2. Continuing Calibration Standard
3. Method Blank
4. Samples - Including MS & MSD from extraction.

(Samples must be run within 12 hours of DFTPP Check)

TABLE 5.6. CORRECTIVE ACTION FOR OUTLYING QC SAMPLES - GC/MS VOLATILES AND SEMI-VOLATILES

QC SAMPLE	ACTION TO TAKE IF OUTSIDE CONTROL LIMITS
Tuning Check	Retune Mass Spectrometer and repeat.
Continuing Calibration Compounds (CCCs)	Rerun 5-standard calibration curve.
Method Blank	VOA - Prepare new blank. Re-run Method Blank. If still out of control, see your supervisor. Semi-VOA - Re-inject blank extract. If still out of control, see your Supervisor.
Matrix Spike and Matrix Spike Duplicates	No corrective action outlined by USEPA criteria. Monitor for long term accuracy and precision problems.
Surrogate Spike	VOA - Re-analyze sample. Semi-VOA - Re-inject sample. If still out of control, see your Supervisor.
Internal Standards	Same as for Surrogate Spikes.

TABLE 5.7. PESTICIDES/PCBs QC SAMPLES - GC

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
Breakdown Check DDT Endrin (included for runs with pesticides)	< 30% breakdown total < 20% for DDT or Endrin See CLP Form 8.	Every analytical batch.
Initial Calibration of Single Component Pesticides at 5 levels. (Reference Curve)	15% Relative Standard Deviation (RSD) for aldrin, g-BHC, 4,4'DDT and heptachlor. 30% RSD for all others.	As needed
Multi-Component Pesticides and PCBs at single level. (Quantitation Standard)	Acceptance criteria is not applicable.	Every analytical batch.
Continuing Calibration INDA-M INDB-M PCB 1016 PCBs 1221/1260 Other PCBs as required by SOP 8080 6.3.3.	aldrin, 4,4'DDT, dieldrin, heptachlor and lindane < 15% RSD. See CLP Form 9.	Every analytical batch.
Surrogate Spike	Advisory Control Ranges are: 24-150% Soil 24-154% Water See CLP Form 2.	Every sample, blank and MS/MSD

TABLE 5.7. PESTICIDES/PCBs QC SAMPLES - GC
(continued)

QC SAMPLE	ACCEPTANCE CRITERIA	FREQUENCY
Matrix Spike and Matrix Spike Duplicate	Listed on CLP Form 5 and SOP 8080.	Once per 20 samples alternating pesticides and PCBs.
Procedure Blank or Method Blank	No target compound detected above the reporting limit.	With each extraction batch.

TABLE 5.8. SUGGESTED ANALYTICAL SEQUENCE FOR GC

1. INDA-M
2. INDB-M
3. PCB 1016
4. PCBs 1221/1260
5. Other PCBs, as required per SOP 8080 6.3.3.
6. Method Blank
7. MS/MSD
8. Samples

TABLE 5.10. CORRECTIVE ACTION FOR OUTLYING QC SAMPLES - GC - PESTICIDES/PCBs

QC SAMPLE	ACTION TO TAKE IF OUTSIDE CONTROL LIMITS
Linearity Check	Perform GC maintenance and repeat.
Continuing Calibration	Perform Initial Calibration.
Surrogate Spikes	No corrective action outlined by USEPA criteria. Monitor for long term precision and accuracy. Re-evaluate method if necessary.
Matrix Spikes and Matrix Spike Duplicates	Same as for Surrogate Spikes
Method Blank	Re-analyze extract. If still out of control, see your Supervisor.

5.3. METHOD DETECTION LIMITS (MDL) / REPORTING LIMITS (RL) AND LIMITS OF QUANTITATION (LOQ)

An MDL is the minimum concentration of a substance that can be qualitatively measured with 99% confidence that the analyte concentration is greater than zero, as compared to DI water, and is determined from analysis of a sample in a given matrix containing the analyte (40 CFR, part 136, Appendix B - Federal Register, Vol. 49, No. 209 - 10/26/84). Upon addition of a new instrument or method, MDLs shall be verified according to 40 CFR, part 136, Appendix B, before that instrument is put in use.

Also, an External Standard Reference Material must be analyzed and measured within acceptance ranges for that analyte before a new method or instrument is put to use.

The Limit of Quantitation is the level above which quantitative results may be obtained with a sspecified degree of confidence. The value for LOQ of 10 times the standard deviation is recommended.

NET Midwest Reporting Limits are based on Limits of Quantitation.

A listing of all NET Midwest Bartlett RLs is available in its Statement of Qualifications.

An MDL technical bulletin is available, upon request, from the NET Midwest Regional Office (Bartlett, IL).

5.4. METHOD OF STANDARD ADDITIONS

The following procedures will be incorporated into MSA analyses:

5.4.1. Data from MSA calculations must be within the linear range as determined by the calibration curve generated at the beginning of the analytical run.

5.4.2. The sample and three spikes must be analyzed consecutively for MSA quantitation (the "initial" spike run data is specifically excluded from use in the MSA quantitation). Only single injections are required for MSA quantitation.

5.4.3. Spikes should be prepared such that:
Spike 1 is approximately 50% of the sample absorbance.
Spike 2 is approximately 100% of the sample absorbance.
Spike 3 is approximately 150% of the sample absorbance.

5.4.4. The data for MSA quantitation should be clearly identified in the raw data documentation along with the slope, intercept and correlation coefficient for the least square fit of the data and the results reported to the client. Reported values obtained by the MSA shall be flagged as such.

5.4.5. If the correlation coefficient for a particular analysis is less than 0.995, the MSA analysis must be repeated once. If the correlation coefficient is still less than 0.995, the results must be flagged.

5.4.6. The X-intercept is the quantified MSA result.

5.5. REFERENCES

1. SW 846. Test Methods for Evaluating solid Wastes. Volume IC: Laboratory Manual. 3rd Edition. November 1986.

2. USEPA Contract Laboratory Program, Statement of Work No. 788, for Inorganic Analysis. June 1989.

3. Illinois Contract Lab Program QAPP, Scope of Work for State. 1989.

4. NET Gulf Coast QAP (Dallas Division). August 1989.

5. Aqualab Training Manual. Bartlett, Ill. May 1986.

6. 40 CFR Part 136 Appendix B - Federal Register Vol. 49, No. 209 - 10/26/84.

7. Sampling and chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program. June 1988. Prepared by the Oak Ridge Gaseous Diffusion Plant Oak Ridge, TN. Operated by Martin Marietta Energy Systems, Inc. for the U>S> Department of Energy.

SECTION 6. SAMPLING PROCEDURES

6.1. INTRODUCTION

Field sampling techinques are designed so the sampler is able to retrieve a sample which is representative of the field area being tested; this sample needs to be of sufficient volume or amount to support the parameters requested. Under some conditions, a client may request a specific point sample which may not be representative of the general area. (e.g. and industrial discharge point suspected of contaminating a broader area.) This type of judgemental sampling shall be decided upon between the client's and lab's field officers. Otherwise, a sampling site shall be chosen to provide a portion representative of the general test area.

6.2. NET STANDARDS OF PROCEDURE

Analysts shall follow NET Field Standards of Procedure when sampling in the field. This field SOP addresses five major sampling types: Grab, Composite, Groundwater, Drum and Soil Sampling. Methods are referenced in table 6.1. As other types of field sampling occur, a standard Field Procedure will be written and approved before sampling begins.

6.2.1. NET FIELD SOP

The Field SOP covers twelve main points:

1. Scope and Application

2. Summary of Procedures

3. Sample Preservation - Table 6.2 outlines preservation techniques and holding times, and indicates which parameters should be analyzed immediately in the field. This assures good sample and parameter integrity.

4. Approved Apparatus

5. Reagents Needed

6. Interferences - Chemical and Physical

6.2.1. NET FIELD SOP (continued)

7. QA/QC - Methods for assuring that the samples are representative of the area being tested and that these samples contain no possibility of contamination from field, trip, equipment, or cross-contamination sources.

8. Procedure - Includes techniques for sample site selection.

9. Calculations

10. Clean Up/Waste Disposal/Safety - Field sampling equipment, at a minimum, shall be cleaned with laboratory detergent, parameter specific solvent or acid rinses, and deionized water. Further equipment clean up, or disposal, shall correspond with the procedure, assuring that equipment should not be a contamination source. Waste disposal procedures shall assure that no waste should fall on a sampling area causing possible contamination of that area.

11. Helpful Hints

12. Deviations from Referenced Method

6.2.2. FIELD SURVEY FORMS

Field SOP's shall include forms used to survey the sample area; and, checklists used to assure that proper equipment and reagents are on hand.

6.2.3. FIELD LOG BOOK

The field analyst shall carry a log book to record sample area information. Log books shall contain the date and time of day, sample area location and sample site selected, reasons for sampling, weather conditions, sample appearance, calculations, on-site analysis, and any other additional field observations or recommendations. The log book is a diary of events at a sample site; it should be organized neatly; so, others can look at the log book and derive information that may deemed vital at a later date.

6.3. INITIAL SET UP

The lab's field officer, if possible, shall meet on-site with the client to determine sampling areas, number of samples, equipment used, and quality control samples to be performed.

6.4. QUALITY CONTROL SAMPLES

Field QC samples* include blanks, duplicates, field spikes and background samples.

Trip Blanks - Used to determine existing container and/or deionized water contamination, or any contamination that may have occurred during transport. Trip blanks are prefilled sample jars carried into the field that remain unopened and are sent to the laboratory after the sampling along with the samples. Trip blanks should be supplied by the laboratory if it is supplying deionized water for the blanks and sample jars. If jars are supplied separately from the water, trip blanks should be prepared by the sampling team prior to leaving the office.

Field Blanks - Prepared in the field during sampling, field blanks are used to determine container contamination and/or contamination that may have resulted from existing field conditions when the samples were collected. Deoinized water is poured from the stock containers into sample jars. The field blank must be collected, preserved and labeled as an aqueous sample.

Equipment Blanks - These blanks are used to determine equipment contamination and/or contamination that may have resulted from existing field conditions when the samples were taken. Equipment blanks should be taken after the equipment has been decontaminated on-site in order to match the conditions of actual sample collection closely. Deionized water should be poured through or over equipment, such as bailers and/or filters that may come in contact with the samples. Each piece of equipment must have a unique equipment blank sample.

*Definitions for QC samples taken from: Environmental Lab. "Sampling In The Field", Mediacom Inc., Vol. 2, No. 3. June/July 1990. pp. 41-46

6.4. QUALITY CONTROL SAMPLES (continued)

Duplicate Samples - Duplicate samples are used to check laboratory precision and should not be identified to the laboratory.

Duplicates which normally require one extra volume of sample, should be taken in an area of suspected or known contamination and given a unique sample number. They must be collected at the same time, from exactly the same location, using the same sampling equipment. Variability is expected in duplicate samples due to nonhomogeneous sample media.

Matrix Spike Samples - Used by the laboratory to determine the effects of the sample matrix on the accuracy of analytical results, matrix spike samples typically requite two to three additional volumes of sample. For the best analytical results,an uncontaminated background location is required. Matrix spike percent recoveries are used to judge the accuracy of sample results only if the indigenous samples do not interfere with spike recovery results. Additional volumes should be collected for all matrices sampled.

Background Samples - Collected for all matrices sampled to determine those parameters indigenous to the area, background samples are used for comparative purposes when determining the type, amount and extent of contamination present and attributable to the site. In order to attribute contamination to the site, background samples need to be collected from undisturbed areas, but should include off-site influences. Avoid taking background samples near railroads,fence lines, roadways, driveways and telephone poles, and, if possible, in active areas of the site. If these potential contaminant sources are an integral part of the site, the sampler should identify them as discrete target locations.

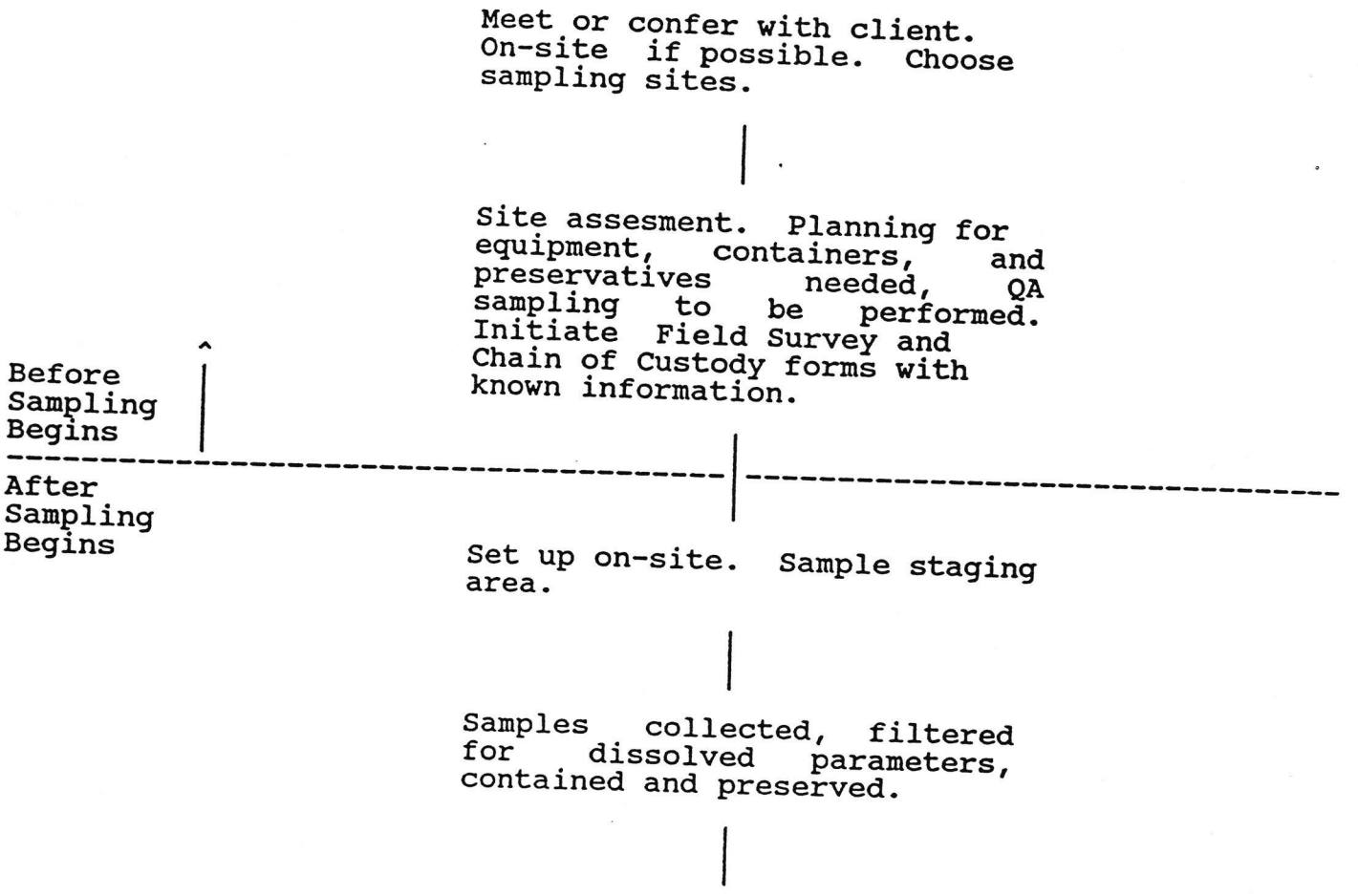
Types of QC samples performed will vary according to sampling types, referenced in the NET Field SOP, site, and client sampling requests. For a sampling process, one may wish to make all three types of blanks and analyze only the field blank on a laboratory run as a screening procedure. If a problem is seen in the field blank, then other blanks can be analyzed to pinpoint the problem.

6.5. ON-SITE PARAMETERS

On-site analyses shall be performed in conjunction with the method referenced. Equipment calibrations, external standards, method blanks, method duplicates and spikes as well as any appropriate QA, shall be performed in the field, just as they would in the lab, according to the method and section 5 of this manual. Parameters tested in the field are dying parameters that may change in concentration or be altered rapidly. The following parameters are immediately tested in the field: ph, Specific Conductivity, Dissolved Oxygen, Free and Total Chlorine and Temperature. Methods and appropriate QA for these on-site parameters are included in the NET Field SOP, as well as methods for Flow Measurements.

6.6. SAMPLE FLOW - SAMPLE STREAM

The complete field process, from choosing the sampling site to handling the sample in the lab, is flowcharted in the following "sample stream".



6.6. SAMPLE FLOW - SAMPLE STREAM (continued)

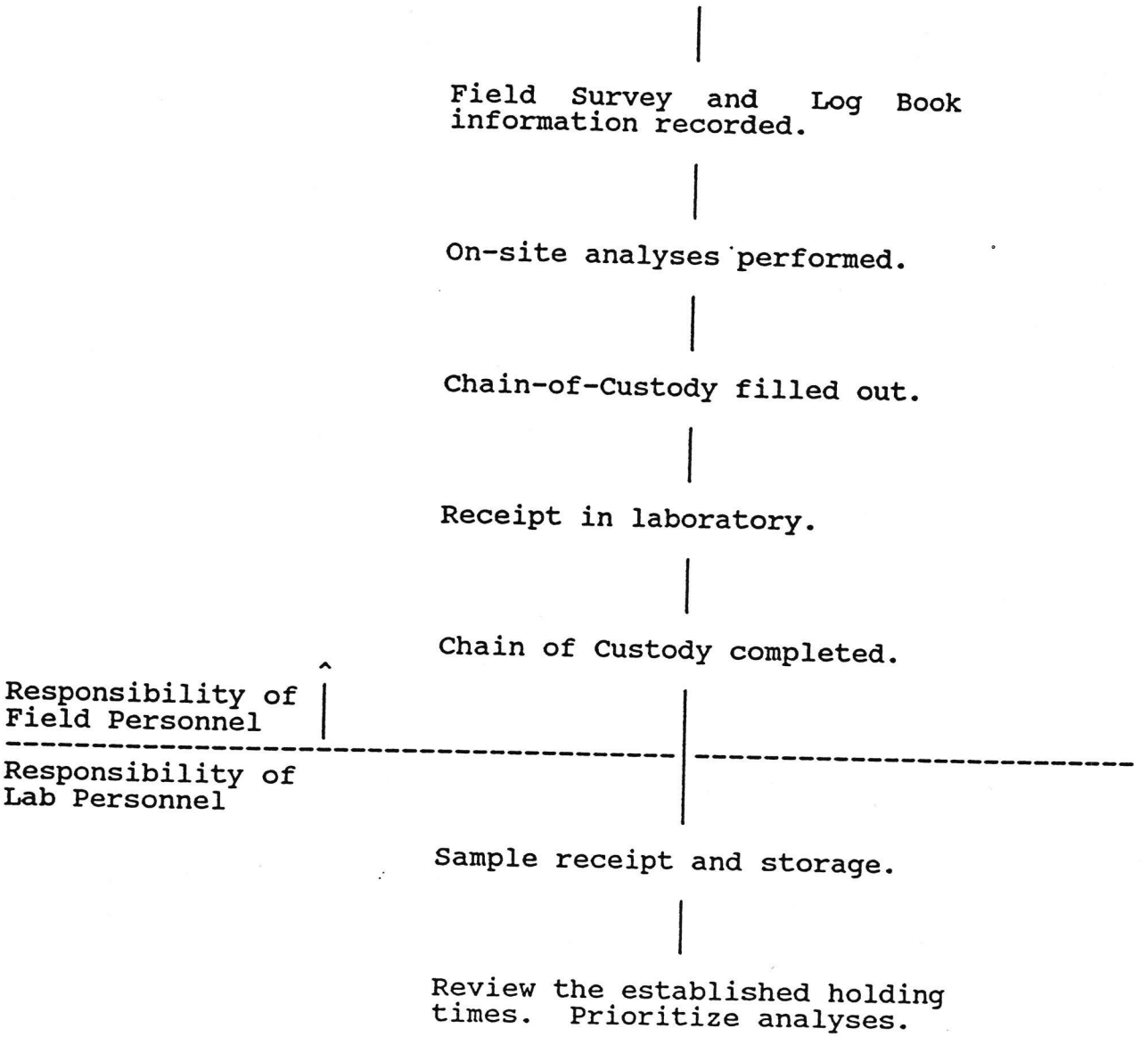


*TABLE 6.1. RECOMMENDED CONTAINERIZATION AND PRESERVATION OF SAMPLES

Measurement	Volume Required mL	Container[a]	Preservative	Holding Times	Reference
Physical Properties					
Color	50	P, G	Cool, 4°C	48 Hrs	1
Conductance	100	P, G	Cool, 4°C	28 Days	1
Hardness	100	P, G	Cool, 4°C HNO_3 to pH <2	6 Mos	1
Odor	200	G only	Cool, 4°C	24 Hrs	1
pH (Per Replicate)	50	P, G	None	Det. on Site	1
Residue					
Filterable	200	P, G	Cool, 4°C	7 Days	1
Non-Filterable	200	P, G	Cool, 4°C	7 Days	1
Total	200	P, G	Cool, 4°C	7 Days	1
Volatile	200	P, G	Cool, 4°C	7 Days	1
Settleable Matter	1000	P, G	Cool, 4°C	48 Hrs	1
Temperature	1000	P, G	None	Det. on Site	1
Turbidity	100	P, G	Cool, 4°C	48 Hrs	1
Metals (except mercury)					
Dissolved	500	P, G	Filter on Site HNO_3 to pH <2	6 Mos	1, 2
Suspended	500	P, G	Filter on Site	6 Mos	1, 2
Total	500	P, G	HNO_3 to pH <2	6 Mos	1, 2
Total Recoverable	500	P, G	HNO_3 to pH <2	6 Mos	1, 2
Mercury-Dissolved	300	P, G	Filter on Site HNO_3 to pH <2	28 Days	1, 2
-Total	300	P, G	HNO_3 to pH <2	28 Days	1, 2
Chromium (Hexavalent)	200	P, G	Cool, 4°C	24 Hrs	1, 2

*Table 6.1. taken from BFI Sampling and Analysis Plan. Please see section 6.7., reference number 3.

Measurement	Volume Required mL	Container[a]	Preservative	Holding Times	Reference
Inorganics, Non-Metallics					
Acidity	200	P, G	Cool, 4°C	14 Days	1, 2
Alkalinity	200	P, G	Cool, 4°C	14 Days	1, 2
Boron	100	P only	Cool, 4°C	28 Days	1
Bromide	200	P, G	None	28 Days	1, 2
Chloride	200	P, G	None	28 Days	1, 2
Chlorine	200	P, G	None	Det. on Site	1, 2
Cyanides	500	P, G	Cool, 4°C NaOH to pH >12	14 Days	1, 2
Fluoride	50	P	None	28 Days	1, 2
Iodide	100	P, G	Cool, 4°C	24 Hrs	1
Nitrogen Ammonia	400	P, G	Cool, 4°C H_2SO_4 to pH <2	28 Days	1, 2
Kjeldahl, Total	500	P, G	Cool, 4°C H_2SO_4 to pH <2	28 Days	1, 2
Nitrate plus Nitrite	200	P, G	Cool, 4°C H_2SO_4 to pH <2	28 Days	1, 2
Nitrate	100	P, G	Cool, 4°C	48 Hrs	1, 2
Nitrite	50	P, G	Cool, 4°C	48 Hrs	1, 2
Dissolved Oxygen					
Probe	300	G only	None	Det. on Site	1, 2
Winkler	300	G only	Fix on Site	8 Hrs	1, 2
Phosphorus					
Ortho-phosphate, Dissolved	100	P, G	Filter on Site Cool, 4°C	48 Hrs	1, 2
Hydrolyzable	100	P, G	Cool, 4°C H_2SO_4 to pH <2	28 Days	1, 2
Total	100	P, G	Cool, 4°C H_2SO_4 to pH <2	28 Days	1, 2

Measurement	Volume Required mL	Container[a]	Preservative	Holding Times	Reference
Inorganics, Non-Metallics					
Total, Dissolved	100	P, G	Filter on Site Cool, 4°C	24 Hrs	1, 2
Silica	50	P only	Cool, 4°C	28 Days	1, 2
Sulfate	100	P, G	Cool, 4°C	28 Days	1, 2
Sulfide	250	P, G	Cool, 4°C 2mL zinc acetate plus NaOH to pH >9	7 Days	1, 2
Sulfite	100	P, G	None	Det. on Site	1
Coliform, Total and Fecal	100	Sterile P, G	Cool, 4°C	6 Hours	3
Gross Alpha, Gross Beta, Radium	4000	P, G	HNO_3 to pH <2	6 Mos.	3
Organics					
BOD	1000	P, G	Cool, 4°C	48 Hrs	1, 2
COD	50	P, G	H_2SO_4 to pH <2	28 Days	1, 2
Oil & Grease (One Replicate)	1000	G only	Cool, 4°C H_2SO_4 or HCl to pH <2	28 Days	1, 2
Organic Carbon	100	G only Teflon Cap Liner	Cool, 4°C H_2SO_4 or HCl to pH <2	28 Days	1, 2
Phenolics	1000	G only	Cool, 4°C H_2SO_4 to pH <2	28 Days	1, 2
MBAS (Surfactants)	1000	P, G	Cool, 4°C	48 Hrs	1, 2
TOX (2 Rep) (4 Rep)	500 1000	G only Teflon Cap Liner	Cool, 4°C H_2SO_4 to pH <2	7 Days	1, 2
Volatile Organics by GC (2 vials @ 50mL)	100	G, Teflon septum cap	Cool, 4°C Cool, 4°C HCl to pH <2	7 Days 14 Days	2, 3

Measurement	Volume Required mL	Container[a]	Preservative	Holding Times	Reference
Organics					
Volatile Organics by GC/MS	100 (2 vials @ 50mL)	G, Teflon septum cap	Cool, 4°C Cool, 4°C, HCl to pH <2	7 Days 14 Days	3 2
Phenols by GC	1000	G, Teflon cap liner	Cool, 4°C	7 Days[b] 30 Days[d] 40 Days[c]	2, 3 2 3
Benzidines by GC	1000	Amber G, Teflon cap liner zero headspace	Cool, 4°C prepare oxidant free	7 Days[b] 7 Days[c]	3 3
Phthalate Ester by GC	1000	G, Teflon cap liner zero headspace	Cool, 4°C	7 Days[b] 30 Days[d] 40 Days[c]	2, 3 2 3
Nitrosamines by GC	1000	Amber G, Teflon cap liner zero headspace	Cool, 4°C prepare oxidant free	7 Days[b] 40 Days[c]	3 3
Organochlorine Pesticides/PCBs by GC	1000	G, Teflon cap liner	Cool, 4°C	7 Days[b] 30 Days[d] 40 Days[c]	2, 3 2 3
Nitroaromatics and Isophorone by GC	1000	G, Teflon cap liners	Cool, 4°C	7 Days[b] 30 Days[d] 40 Days[c]	2, 3 2 3
Polynuclear Aromatic Hydrocarbons by GC	1000	Amber G, teflon cap liners	Cool, 4°C	7 Days[b] 30 Days[d] 40 Days[c]	2, 3 2 3
Organophosphorous Pesticides by GC	1000	G, Teflon cap liners	Cool, 4°C	14 Days[b] 30 Days[d]	2 2
Haloethers by GC	1000	G, Teflon cap liners	Cool, 4°C	7 Days[b] 40 Days[c]	3 3
Chlorinated Hydrocarbons by GC	1000	G, Teflon cap liners	Cool, 4°C	7 Days[b] 30 Days[d] 40 Days[c]	2, 3 2 3

Measurement	Volume Required mL	Container[a]	Preservative	Holding Times	Reference
Organics					
Chlorinated Herbicides by GC	1000	G, Teflon cap liner	Cool, 4°C	7 Days[b] 30 Days[d]	2 2
Semi-Volatiles by GC/MS	2000	G, Teflon cap liner	Cool, 4°C	7 Days[b] 40 Days[c] 14 Days[b] 40 Days[d]	3 3 2 2

NOTES:
a - Plastic (P) or Glass (G). For metals, polyethylene with an all polypropylene cap is preferred.
b - Maximum holding time from sampling to extraction.
c - Maximum holding time from extraction to analysis.
d - Maximum holding time from sampling to analysis.

REFERENCES:
1 - Methods for Chemical Analysis of Water and Wastes, March 1983, USEPA, 600/4-79-020 and additions thereto.
2 - Test Methods for Evaluating Solid Waste, Physical/Chemical Method, November, 1986, Third Edition, USEPA, SW-846 and additions thereto.
3 - "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act", Environmental Protection Agency, Code of Federal Regulations (CFR), Title 40, Part 136.

6.7. REFERENCES

1. "NET Field Standards of Procedure"

2. Environmental Lab. "Sampling in the Field". Mediacom, Inc., Vol. 2 No. 3 June/July 1990.

3. BFI Sampling and Analysis Plan. "Sampling Groundwater Monitoring Wells". BFI P.O. Box 3151. Houston, Texas 77253.

4. Standard Methods for the Examination of Water and Wastewater. 1989. 17th Edition Part 1060. "Collection and Preservation of Samples".

5. USEPA. Test Methods for Evaluating Solid Waste. November 1986. SW-846 3rd Edition. Volume II: Field Manual.

SECTION 7. SAMPLE CUSTODY AND LOG-IN PROCEDURES

7.1. Chain of Custody

7.2. Sample Flow

7.3. Paper Flow

7.4. Interlaboratory Shipment - Standard Operating Procedure

7.1. CHAIN OF CUSTODY

Each sample batch submitted shall be tracked by a Chain of Custody (COC). The COC starts at sample collection. It records appropriate sample information; and, is the client's opportunity to document project requirements. Instructions for completion of the COC are on the reverse side of that document.

Every time the sample passes hands, that transaction is described and the COC is signed by both parties.

The COC is a final statement of request to describe the client's needs for that sampling event. Samples are logged-in according to the COC and the log-in process is reviewed by comparison to the COC.

If a question arises at a future date, the COC is a description of the samples and parameters requested. The COC is required for audit compliance and certification.

When the sample analyses are complete, and results are reported, a copy of the COC will accompany the client's report.

A copy of the NET Midwest COC is provided here. A client may use specific COCs approved by their firm.

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Bartlett Division
850 West Bartlett Road
Bartlett, IL 60103

Tel: (708) 289-3100
Fax: (708) 289-5445

CHAIN OF CUSTODY

Client	Project Name
Send Report to:	
Address Telephone #	Collected by:

Collection Information								Parameters													
Sample ID	Sampling Location	Date	Time	G R A B	C O M P	Sample Type	No. of Con-tainer														

Remarks: _____

Relinquished by:	Date	Time	Received by:	Date	Time
Shipping Notes/Lab Comments			Received for NET Midwest by:		

Samples Field Filtered: ___ Yes ___ No
Seals Intact Upon Receipt: ___ Yes ___ No ___ N/A

7.2. SAMPLE FLOW

Sample Collection - COC started.

|

Sample received at NET - COC signed at the lab.

|

Sample logged into NET computer systems with a unique sample number.

|

Sample and paperwork given to Sample Custodian. Proper preservation techniques and holding times are monitored.

|

If necessary, the sample is split; then, distributed to the appropriate areas of the lab for analysis. Access to sample holding areas is restricted to analytical personnel and the Sample custodian only.

|

Sample analysis.

|

7.2. SAMPLE FLOW
(continued)

Sample completion and results reported.

|

Samples are kept in refrigerated storage or returned to the client per request.

|

Sample disposal - after a waiting period of at least one month from the analytical report. Special handling if the samples are found to be hazardous.

7.3. PAPER FLOW

COC signed by the receptionist.

|

Sample logged into NET computer systems. Any special circumstances are noted for reference by analysts.

|

The log-in sheet and COC, with complete sample information, go to the Sample Custodian for storage and tracking.

|

The log-in sheet then goes to the Administrative Services Manager to ensure the sample was logged-in according to customer needs.

|

The paperwork is filed and matched with the report when results are complete. The original COC is sent with the report. Copies are kept on file.

7.4. SOP: Interlaboratory Shipment of Samples

1. Discuss and arrange the following with the NET laboratory that will receive the samples:

a. Price
b. Turnaround time
c. What analyses are required
d. Number of samples
e. How samples will be shipped and when will they arrive.
f. Any special methods, detection limits or certifications.
g. Any special chain-of-custody requirements.
h. Any holding time concerns.
i. Any special information on the nature of the samples.
j. Any special report requirements.

2. Apply the stamp to a copy of your LABSYS Sample Log Sheet (see attached examples). Fill in all information provided on the stamp imprint as communicated above and additional information as required.

3. Chain-of-custody is required. Retain a photocopy of the original. Send the original with the samples.

4. Next, HIGHLIGHT your appropriate sample number(s) on the LABSYS logsheet. This will be the receiving lab's sample identification for the report.

5. Next, HIGHLIGHT the appropriate analytes that you are requesting the receiving lab to analyze.

6. Send the completed original stamped Log Sheet with the samples. Do not FAX this sheet, as the highlighted information will be obliterated in the process.

7. Next carefully pack the samples into an appropriate container for shipment. Include the pertinent paperwork. Use an appropriate method of shipment to insure sample integrity, chain-of-custody and timeliness of receipt.

8. Upon receipt of samples, log in using sending Division's Sample No. and Client Name as "SAMPLE DESCRIPTION".

9. Maintain chain-of-custody and sample control as normal.

10. Return original signed Chain-of-Custody document with Analytical Report.

11. Do not Interlab for USEPA CLP samples or any projects that specify analysis only at the Bartlett Division.

SECTION 8. CALIBRATION PROCEDURES AND FREQUENCY

Table 8.1. Analysis Type and Calibration Procedure

Volatiles by GCMS

Semi-Volatiles by GCMS

Pesticides by GC

PCBs by GC

Herbicides by GC

Metals by ICP

Metals by Flame AA, Cold Vapor and Hydride Generation

Conventionals

8.2. Quantifying Results and Linear Range

8.3. Traceability of Standards

TABLE 8.1.

Analysis Type	Calibration Procedure
Volatiles by GCMS	5 - standard calibration curve on file: For Continuing Calibration Check Compounds (CCC), the Percent Relative Standard Deviation (%RSD) must be < 30.0%. For System Performance Check Compounds (SPCC), the minimum mean Response Factor (RF) must be > 0.05. 1 - standard daily calibration: For CCC, the Percent Difference (%Diff) between the daily RF and the mean RF must be < 25.0%. For SPCC, the RF must be > 0.05. 5 - standard calibration curves are regenerated when CCC and SPCC criteria are not met.
Semi-Volatiles by GCMS	5 - standard calibration curve on file: CCC: %RSD < 30.0% SPCC: mean RF > 0.25. (exception: bromoform mean RF > 0.30) 1 - standard daily calibration: CCC: %Diff < 25.0% SPCC: RF > 0.25. Bromoform > 0.30. 5 - standard calibration curves are regenerated when CCC and SPCC criteria are not met.

TABLE 8.1. (continued)

Analysis Type	Calibration Procedure
Pesticides by GC/ECD	5 - standard calibration curve on file: CCC: %RSD < 20.% Other compounds: %RSD < 30.% 1 - standard daily calibration: CCC: %Diff < 20.%
PCBs by GC/ECD	5 - standard calibration curve on file using either Arachlor 1242 or 1221/1260 mix. %RSD < 30.%, warning. 1 - standard daily calibration: %Diff < 20.%, warning.
Herbicides by GC/ECD	1 - standard daily calibration. Any positive hits must be diluted to within three times the concentration of the calibration standard.
Metals by ICP	Manufacturer's software: 2 - standard and 1 - blank calibration curve with each run. The curve is not forced through zero. Correlation coefficient (r) must be > 0.9995. Back-calculated standards must agree within 90. - 110. % of the true value. The low-range standard should agree within 80. - 120. % of the true value.

TABLE 8.1. (continued)

Analysis Type	Calibration Procedure
Metals by Flame AA, Cold Vapor and Hydride Generation	3 - standard calibration curve with each run. r > 0.995. Back-calculated high and mid-range standards must agree within 90. - 110. % of the true value. The low-range standard should agree within 80. - 120. % of the true value.
Conventionals	5 - standard calibration curve on file: Run twice, on non-consecutive days and using 10 points to construct the curve. r > 0.995. Back-calculated standards must agree within 90. - 110. % of the true value. The low-range standard should agree within 80. - 120. % of the true value. 3 - standard daily calibration curve: r > 0.995. Back-calculated standards must agree within 90. - 110. % of the true value. The low-range standard should agree within 80. - 120. % of the true value. The 5 - standard curve is generated when there is a change in analyst or instrument conditions.

8.2. QUANTIFYING RESULTS AND LINEAR RANGE

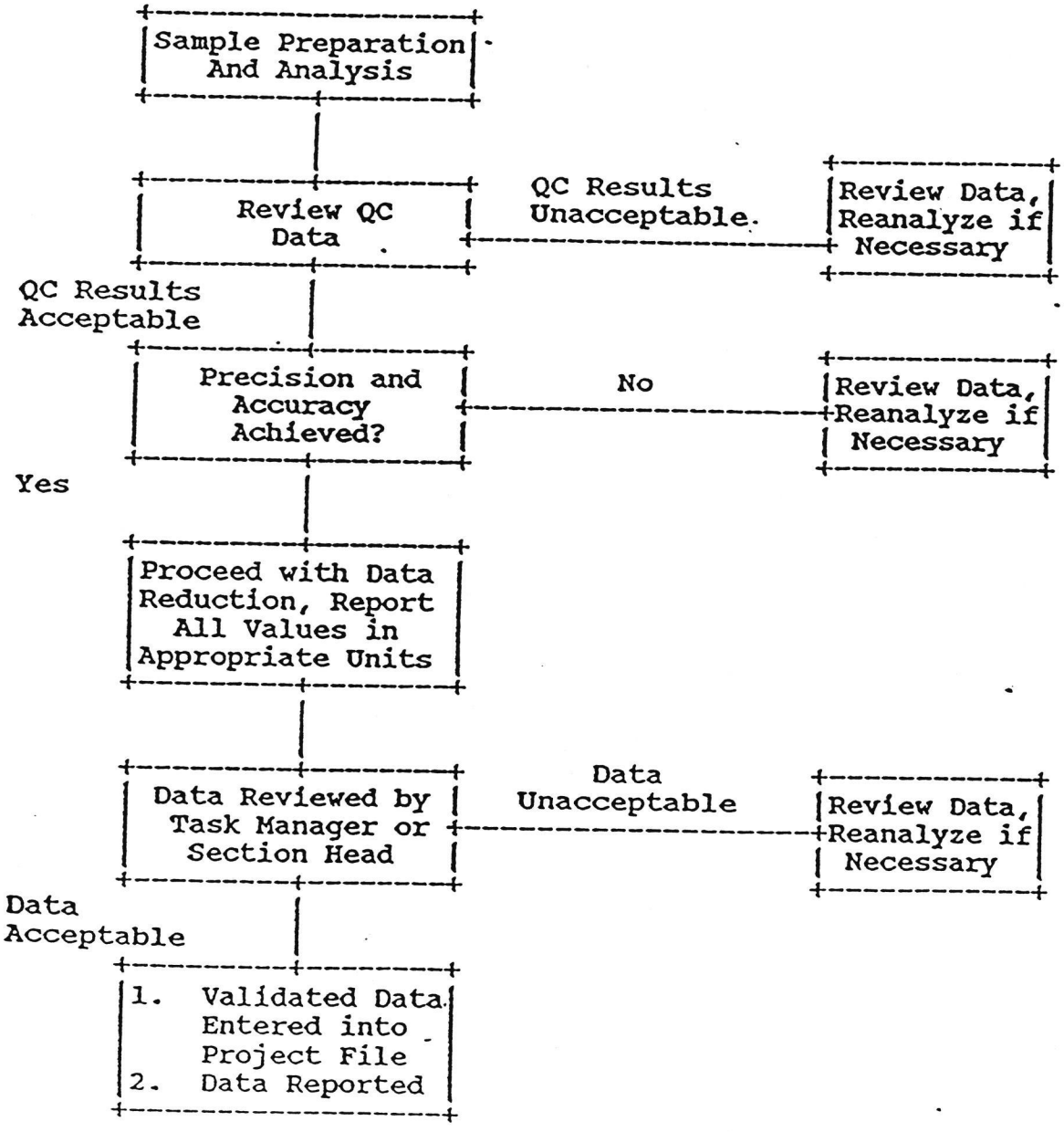
Any result shall be quantified at a point less than the highest concentration of standard used to construct that calibration curve or less than the highest standard analyzed and shown to be in control for that run. If the original run is above the highest standard, the sample must be diluted to such a point within that curve. Therefore, the calibration curve or the high standard (linear range standard) indicates the practical linear range for that parameter.

8.3. TRACEABILITY OF STANDARDS

Standards for GC, GC/MS and ICP are purchased with traceability papers, tracing the reliability of that standard to a reference value at the National Bureau of Standards, Washington D.C.

SECTION 9. DATA REDUCTION, VALIDATION AND REPORTING

TABLE 9.1. NET Analytical Data Reporting Scheme



9.1. Data Reduction

Analytical results will be reduced to appropriate concentration units using appropriate methods given in the analytical procedure.

9.2. Data Validation

Data validation is the process of examining data and accepting or rejecting it based on pre-defined criteria. NET supervisory and analytical personnel use the following criteria to validate laboratory data:

- Use of approved analytical procedure,
- Use of properly operating and calibrated instrumentation, and
- Precision, Accuracy and Completeness comparable to the Quality Assurance Objectives, specifically discussed in section 5.

Records of all data will be maintained. If any of the above criteria are not met, corrective action must take place before the data is validated.

9.3. Data Reporting

Analytical results will be reported on formats acceptable to the customer. These reports will be assembled by the project manager and delivered to the customer within the time frame specified by the customer and agreed to by the laboratory.

If, for any reason, requirements for data validation are not met, the appropriate result will be flagged on the analytical report - if agreeable to the client.

9.4. QC Summaries

The QC sample data, from QC samples listed in section 5, are recorded for each analytical run. This data is kept on file. If a client should need any information from these QC samples, the information is available at different reporting levels and at different charges. There is no charge for the most basic QC information. The QC data is reportable with the analysis or at a later date.

SECTION 10. PERFORMANCE AND SYSTEM AUDITS

NET Midwest Bartlett maintains a schedule of both external and and internal performance and system audits. The following describes external audits.

10.1. PERFORMANCE AUDITS

NET Midwest Bartlett is audited, in the form of performance evaluation samples (PEs), by the following agencies at the following frequencies:

Federal Government

- NET Bartlett currently participates in the USEPA Contract Lab Program (CLP). Under this program, PE samples are analyzed quarterly.

- Water Pollution (WP) and Water Supply (WS) performance samples are analyzed approximately quarterly, between the two studies. Results from these samples are available to the client upon request.

- National Pollutant Discharge Elimination System (NPDES) performance samples are analyzed annually for NPDES permitting.

State Government

- Annual performance samples are submitted by the State of Illinois for its Safe Drinking Water Act Certification.

- Annual performance samples are analyzed for Wisconsin Department of Natural Resources certification.

Local Agencies

- The types and frequency of PE samples analyzed for local industries varies.

For all the above listed programs, reports are sent from our lab to the existing agency. That agency reports data back to NET Midwest Bartlett in the form of the true value of analytes tested, the recovered mean, standard deviation, and acceptance ranges. The latter three values are statistically calculated from results supplied by participating laboratories.

10.1. PERFORMANCE AUDITS (continued)

Any parameter that falls outside the given acceptance window is flagged. At NET Midwest, these parameters undergo a rigorous corrective action report. Additional performance samples are submitted to monitor progress of that method.

A blank Corrective Action Report is supplied on pages 4 through 7, section 10.3.

10.2. System Audits

System audits are in the form of a visit to our lab by a professional auditor or auditors. On the government level, the CLP lab is audited anually. State audits are performed if the lab is seeking new certification or the same certification under a new method.

Private industries perform system audits more frequently. NET Midwest Bartlett is audited by private firms approximately once per month.

A system audit will consist of a visit of usually one day. In this time, the auditor makes recommendations from his audit findings. Generally, excellent information is given to the lab by auditors as the professional auditors are highly experienced and knowledgable.

The lab will then respond to audit findings in the form of future plans or changes.

Detailed files and follow-up are kept for every system or performance audit.

10.3.

NATIONAL ENVIRONMENTAL TESTING, INC.

Corrective Action Report

Page 1 of 3

TO: QA Director DATE:
cc:

RE: Out-of-Control Value Reported

FR: _____

Division: _____ Dept: _____

Analysis: _____ #: _____

True value: _____ Reported value: _____ Units: _____

Control limits (CLs): _____ CL ref: APG; 2*stdev

Method reference & #: _____

Instrument ID and type: _____

Problem Identification - Check ALL Boxes That Apply

- ☐ Training
- ☐ Supervision
- ☐ Method not followed
- ☐ Login
- ☐ QC not performed
- ☐ Reporting
- ☐ QC CLs ignored
- ☐ Laboratory contamination
- ☐ Detection limits problems
- ☐ Instrument or service problem
- ☐ Dilution or calculation
- ☐ Standards supplier problem
- ☐ Other _____
- ☐ Unknown

Corrective Action Taken: 1. _____

_____

_____

_____

Date: _____ _____
Section Supervisor

_____ _____
QA Manager Division Manager

10.3.

NATIONAL ENVIRONMENTAL TESTING, INC.

Corrective Action Report

Page 2 of 3

DATE:

TO: QA Director

cc:

RE: Regionally Administered PE Results

FR: Regional Quality Assurance Manager

#:_____ Analysis:_____ Division:_____

PE Sample Source: _____

PE True Value: _____ PE Control Limits: _____

Control Limit reference: _____

Laboratory Result: _____

Date of PE Analysis: _____

Was the PE Single Blind? _____ Double Blind? _____

Is the Analysis now in Control: _____

Comments: _____

_____

_____

_____

_____

_____

_____

Regional Quality Assurance Manager

10.3.

Corrective Action Report - Quality Control Indicators

#:_____ Anaylsis:_____ Division:_____

DETECTION LIMIT (DL)	METHOD BLANK
Date run Measured DL	Date Concentration Control Limit(CL)
Detection Limit Reference	Method Blank CL Reference

INITAL CALIBRATION VERFIRICATION STANDARD - Indep Ref.

Date run	True Concentration	Measured Concentration	CLs
External Standard Control Limit Reference			

CONTINUING CALIBRATION VERIFICATION STANDARD

Date run	True Concentration	Measured Concentration	CLs
LCS Control Limit Reference			

ACCURACY CHECK - SAMPLE SPIKE

Date run	Sample Conc.	Spike Conc. Added	Total Conc. Observed	Percent Recovery
Accuracy CLs	Accuracy Control Limit Reference			

PRECISION CHECK - SPIKE & SPIKE DUPLICATE OR SAMPLE & DUPLICATE

Date run	True Conc.	Relative % Difference (RPD)	RPD CL	RPD CL Reference

CALIBRATION

Date run	# of standards	Lowest standard Concentration	Highest standard Concentration
Calibration CL	Observed	Calibration CL Reference	

SIGNATURE _____ DATE _____

19 Sep 90

10.3.

CORRECTIVE ACTION CHECKLIST

Try to identify the real problem, not just the symptoms
Conduct the investigation of items in the order presented

____1) Transcription Errors	- raw data result vs PE result? - lab notebook result vs computer result? - between any of the raw data?
____2) Calculation Errors	- are correct raw data values used? - were dilutions, if made, accounted for? - back calculate to check calculation. - was result in correct units?
____3) Log-In Errors	- was correct sample used? - were correct parameters analyzed? - check chain of custody, if appropriate. - was preservation correct? - was container correct?
____4) Batch QC Errors	- were proper QC indicators analyzed? - were control limits met? - is result greater than MDL? - does blank show contamination? - is calibration valid? - was ICVS in control and consistent? - did CCVS verify calibration? - was LCS in control? - were MS/MSD or Dup results appropriate? - check QC chart trends.
____5) Standards Errors	- were standards within shelf life? - are they the right standards? - were they made correctly? - do standards show signs of concentrating? - was standardization necessary? - were new standards compared to old? - was new curve verified with an ICVS?
____6) Reagent Errors	- were reagents within shelf life? - are they the right reagents? - were they made correctly? - were they obtained from new source? - are reagents contaminated? - check DI water, any problems with system?
____7) Instrument Errors	- when was instrument last serviced? - is maintenance or cleaning needed? - did instrument malfunction during test? - was response normal?
____8) Method Errors	- was proper method used? - was an approved SOP available? - was SOP followed? - is there known problem with method? - was holding time met? - was good lab techniques used? - was the analyst properly trained? - were interferences considered? - were prep steps proper & complete? - were dilutions at proper concentration? - review all raw data.
____9) PE Sample Errors	- reason to question validity of PE sample? - was sample reanalyzed to verify result? - was PE sample prepared per instructions?

SECTION 11. PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULE

Every instrument and pipet has a maintenance schedule of at least once per month. Maintenance files include information on routine maintenance, steps and frequencies, and provides space for a diary of work done to that instrument.

The analyst is responsible for all instrument maintenance in his or her area. Maintenance schedules are provided in the owner's manual or by the area supervisor. That supervisor is responsible for checking the upkeep of maintenance files monthly.

Service contracts are maintained for GC, GC/MS and ICP.

SECTION 12. QUALITY ASSURANCE REPORTS TO MANAGEMENT

The laboratory's Quality Assurance Coordinator reports to the Division Manager in two forms. 1) A weekly meeting where both short term and long term progress and goals are discussed. 2) A written monthly report discussing the progress and happenings of the past month. The monthly report would include any performance or system audits.

SECTION 13. LISTING OF ACRONYMS

TABLE 13.1.

AA	- Atomic Absorption
BFB	- Bromofluorobenzene - volatile tuning compound
CAR	- Corrective Action Report
CB	- Calibration Blank
CCC	- Continuing Calibration Compound
CCV	- Continuing Calibration Verification
CFR	- Code of Federal Regulations
CL	- Control Limit
CLP	- Contract Lab Program
COC	- Chain-of-Custody
DFTPP	- Decafluorotriphenylphosphine - semi-volatile tuning compound
GC	- Gas Chromatograph
GC/MS	- Gas Chromatograph/Mass Spectrometer
ICP	- Inductively Coupled Plasma
ICV	- Initial calibration Verification
INDA-M	- Individual Mix A; pesticides standard
INDB-M	- Individual Mix B; pesticides standard
ITP	- Internal Testing Program
LCS	- Lab Control Sample (or Standard)
LOQ	- Limit of Quantitation
MDL	- Method Detection Limit
MSA	- Method of Standard Additions
MS/MSD	- Matrix Spike/Matrix Spike Duplicate
NET	- National Environmental Testing
NPDES	- National Pollutant Discharge Elimination System
PB	- Procedure Blank
PCB	- Polychlorinatedbiphenyl
PEs	- Performance Evaluation Samples
QA	- Quality Assurance
QAP	- Quality Assurance Plan
QAPP	- Quality Assurance Project Plan
QC	- Quality Control
r	- correlation coefficient
%R	- Percent Recovery
RF	- Response Factor
RL	- Reporting Limit
RLVS	- Reporting Limit Verification Standard
%RSD	- Percent relative Standard Deviation (SD divided by the mean) x 100
RPD	- Relative Percent Difference (difference divided by the average) x 100

TABLE 13.1. LISTING OF ACRONYMS
(continued)

SD - Standard Deviation
SOP - Standard Operating Procedure
SOQ - Statement of Qualifications
SPCC - System Performance Check Compound
SRM - Standard Reference Material
SW-846 - Solid Waste Manual; USEPA
USEPA - United States Environmental Protection Agency
VOA - Volatile Organic Analysis
WP - Water Pollution; PE study
WS - Water Supply; PE study

Independence Plant
701 17th Street S.E.
Independence, IA

Waterloo Plant
3136 Wagner Road
Waterloo, IA

Pries Enterprises, Inc.

Aluminum Extrusions and Fabrications
Box 777, 701 17th Street S.E.
Independence, Iowa 50644
Phone (319) 334-7068
FAX (319) 334-7060

June 10, 1992

E.P.A.
Region VII
726 Minnesota Avenue
Kansas City, KS 66101
Attn: Don Lininger

Re: Pries Enterprises, Inc.
Independence, IA 50644
EPA ID NO. IAD981716806

Dear Don:

Enclosed are bound documents regarding Closure Certification at this facility. Thank you for your patience.

Sincerely,

Merle J. McMahon

Merle J. McMahon
President